

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

DIALECT, LLC,
Plaintiff,

v.

GOOGLE LLC and ALPHABET INC.,
Defendants.

Civil Action No. _____

JURY TRIAL DEMANDED

**COMPLAINT FOR PATENT INFRINGEMENT AND DAMAGES
AND DEMAND FOR JURY TRIAL**

Plaintiff Dialect, LLC (“Dialect” or “Plaintiff”) files this Complaint for Patent Infringement and Damages against Google LLC and Alphabet Inc. (collectively, “Google/Alphabet” or “Defendants”) and alleges as follows:

INTRODUCTION

1. The novel inventions disclosed in U.S. Patent Nos. 7,398,209 (the “’209 Patent”); 7,502,738 (the “’738 Patent”); 7,640,160 (the “’160 Patent”); 7,693,720 (the “’720 Patent”); 8,015,006 (the “’006 Patent”); 8,447,607 (the “’607 Patent”); 8,849,652 (the “’652 Patent”); and 9,031,845 (the “’845 Patent”) (collectively, the “Asserted Patents”) in this matter were invented by VoiceBox Technologies (“VoiceBox”). VoiceBox was a key pioneer in the fields of voice recognition technology and natural language understanding (“NLU”). These technologies power a wide variety of consumer electronics and provide key functionality for smart phones, tablets, TVs, and Internet of Things (“IoT”) devices. VoiceBox spent more than a decade developing and building key early NLU inventions producing one of the most valuable portfolios of technology according to the Institute of Electrical and Electronics Engineers (“IEEE”), including the Asserted Patents. The Asserted Patents in this case are the result of this substantial investment and research.

2. Over the years, the inventions claimed in the Asserted Patents have been licensed to key companies in the industry.

THE PARTIES

3. Plaintiff is a Texas limited liability company with its principal place of business located at 133 E. Tyler St., Longview, TX 75601-7216.

4. Plaintiff is the current owner and assignee of the Asserted Patents.

5. Defendant Google LLC (“Google”) is a limited liability company organized and existing under the laws of Delaware. Google LLC’s registered agent for service of process is Corporation Service Company, 251 Little Falls Drive, Wilmington, Delaware 19808.

6. Defendant Alphabet Inc. (“Alphabet”) is a corporation organized and existing under the laws of Delaware. Alphabet Inc.’s registered agent for service of process is Corporation Service Company, 251 Little Falls Drive, Wilmington, Delaware 19808.

7. On information and belief, Alphabet owns the entire equity interest of Google.

JURISDICTION

8. This civil action arises under the Patent Laws of the United States, 35 U.S.C. §§ 1 *et seq.*, as amended.

9. This Court has subject matter jurisdiction to hear this action under 28 U.S.C. §§ 1331 and 1338(a).

10. This District has personal jurisdiction to hear this action for at least the reasons that each Defendant is domiciled in Delaware and maintains an agent for service of process in Delaware.

11. Venue is proper in this District for at least the reason that each Defendant is domiciled in this District and therefore resides in this District.

THE ASSERTED PATENTS

12. The VoiceBox inventions contained in the Asserted Patents in this case relate to groundbreaking improvements to voice recognition and NLU and have particular application in consumer electronics such as smart phones, tablets, and IoT devices.

U.S. PATENT NO. 7,398,209

13. On July 8, 2008, the U.S. Patent and Trademark Office (“U.S. Patent Office”) duly and legally issued the ’209 Patent, entitled “Systems And Methods For Responding To Natural Language Speech Utterance.” A true and correct copy of the ’209 Patent is attached hereto as **Exhibit 1**.

14. Dialect is the owner and assignee of all right, title, and interest in and to the ’209 Patent, including the right to assert all causes of action arising under the ’209 Patent and the right to sue and obtain any remedies for past, present, or future infringement.

15. The ’209 Patent describes, among other things, novel systems and methods for receiving natural language queries and/or commands. ’209 Patent, Abstract. The claimed invention makes significant use of context, prior information, domain knowledge, and user specific profile data to achieve a natural environment for one or more users. *Id.* As the ’209 Patent explains, prior to its inventions, a machine’s ability to communicate with humans in a natural manner was a difficult technical problem in need of a technical solution. As described in the specification, in the prior art “human questions and machine processing of queries may be fundamentally incompatible,” because “a person asking a question or giving a command typically relies heavily on context and the domain knowledge of the person answering,” whereas “machine-based queries” are “highly structured and are not inherently natural to the human user.” *Id.* at 1:27–35. The inventions described and claimed in the ’209 Patent overcome these challenges in various embodiments, for example by providing a system that uses domain agents to organize domain

specific behavior and information. *Id.* at 2:48–59. The inventions in various embodiments further include a system capable of parsing and interpreting the natural language query to “determine the domain of expertise required and context, invoking the proper resources, including agents.” *Id.* at 4:46–54.

16. The novel features of the invention are recited in the claims. For example, Claim 1 of the ’209 Patent recites:

A method responsive to a user generated natural language speech utterance, comprising:
receiving the user generated natural language speech utterance, the received user utterance containing at least one request;
maintaining a dynamic set of prior probabilities or fuzzy possibilities usable at each stage of processing the received user utterance;
recognizing words and phrases contained in the received utterance using information in one or more dictionary and phrase tables;
parsing the recognized words and phrases to determine a meaning of the utterance, wherein determining the meaning includes determining a context for the at least one request contained in the utterance based on one or more keywords contained in the recognized words and phrases;
selecting at least one domain agent based on the determined meaning, the selected domain agent being an autonomous executable that receives, processes, and responds to requests associated with the determined context;
formulating the at least one request contained in the utterance in accordance with a grammar used by the selected domain agent to process requests associated with the determined context;
invoking the selected domain agent to process the formulated request; and
presenting results of the processed request to the user, the presented results generated as a result of the invoked domain agent processing the formulated request.

’209 Patent at Claim 1.

17. Figure 6 of the ’209 Patent, reproduced below, shows a block diagram of a process for determining the proper domain agents to invoke and properly formatting queries for the agents according to one embodiment of the invention.

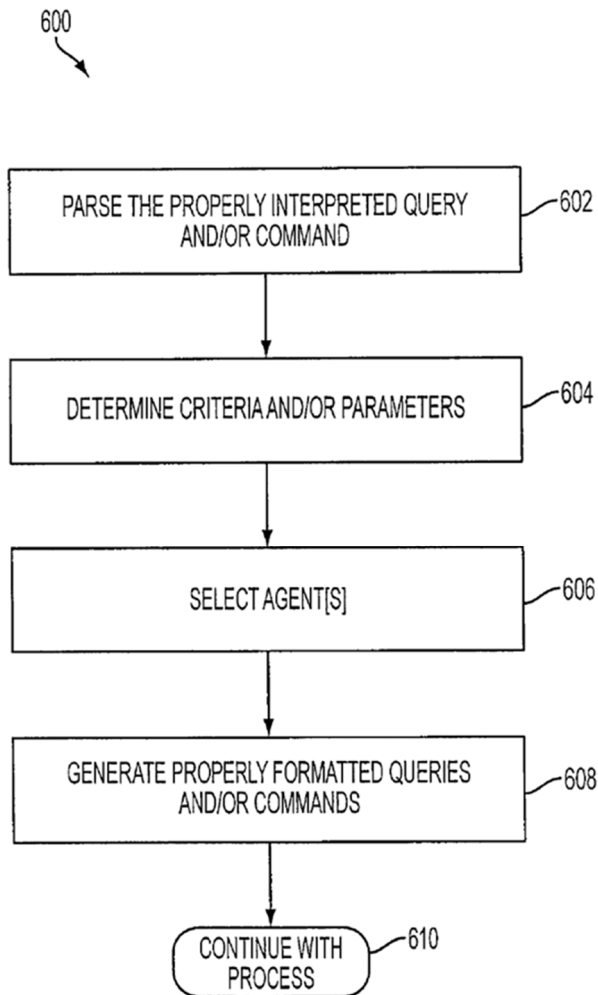


FIG. 6

'209 Patent, Fig. 6.

U.S. PATENT NO. 7,502,738

18. On March 10, 2009, the U.S. Patent Office duly and legally issued the '738 Patent, entitled "Systems And Methods For Responding To Natural Language Speech Utterance." A true and correct copy of the '738 Patent is attached hereto as **Exhibit 2**.

19. Dialect is the owner and assignee of all right, title, and interest in and to the '738 Patent, including the right to assert all causes of action arising under the '738 Patent and the right to sue and obtain any remedies for past, present, or future infringement.

20. The '738 Patent describes, among other things, novel systems and methods for receiving natural language queries and/or commands. '738 Patent, Abstract. The claimed invention makes significant use of context, prior information, domain knowledge, and user specific profile data to achieve a natural environment for one or more users. *Id.* As the '738 Patent explains, prior to its inventions, a machine's ability to communicate with humans in a natural manner was a difficult technical problem in need of a technical solution. As described in the specification, in the prior art "human questions and machine processing of queries may be fundamentally incompatible," because "a person asking a question or giving a command typically relies heavily on context and the domain knowledge of the person answering," whereas "machine-based queries" are "highly structured and are not inherently natural to the human user." *Id.* at 1:26–37. The inventions described and claimed in the '738 Patent overcome these challenges in various embodiments, for example by providing a system that uses agents to organize domain specific behavior and information. *Id.* at 2:47–56. The inventions in various embodiments, include an "update manager" that "is used to add new agents to the system." *Id.* at 2:63–67.

21. The novel features of the invention are recited in the claims. For example, Claim 1 of the '738 Patent recites:

A system responsive to a user generated natural language speech utterance, comprising:

an agent architecture that includes a plurality of domain agents, each of the plurality of domain agents being an autonomous executable configured to receive, process, and respond to requests associated with a respective context;

a parser configured to determine a context for one or more keywords contained in the utterance and to determine a meaning of the utterance based on the determined context, wherein the parser selects at least one of the plurality of domain agents based on the determined meaning, wherein the selected domain agent is configured to receive, process, and respond to requests associated with the determined context;

an event manager configured to coordinate interaction between the parser and the agent architecture; and

an update manager that enables the user to purchase one or more domain agents from a third party on a one-time or subscription basis.

'738 Patent at Claim 1.

22. Figure 2 of the '738 Patent, reproduced below, shows a schematic block diagram of an embodiment showing the agent architecture.

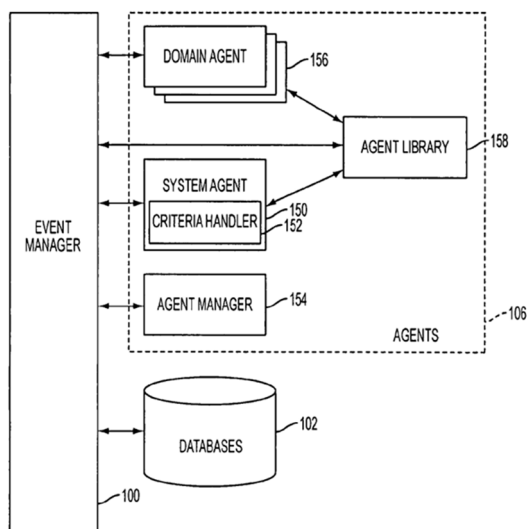


FIG. 2

'738 Patent, Fig. 2.

U.S. PATENT NO. 7,640,160

23. On December 29, 2009, the U.S. Patent Office duly and legally issued the '160 Patent, entitled "Systems And Methods For Responding To Natural Language Speech Utterance."

A true and correct copy of the '160 Patent is attached hereto as **Exhibit 3**.

24. Dialect is the owner and assignee of all right, title, and interest in and to the '160 Patent, including the right to assert all causes of action arising under the '160 Patent and the right to sue and obtain any remedies for past, present, or future infringement.

25. The '160 Patent describes, among other things, novel systems and methods for receiving natural language queries and/or commands and executing the queries and/or commands. '160 Patent, Abstract. The systems and methods improve the reliability of determining the context of speech and non-speech communications and presenting the expected results for a particular question or command. *Id.* As the '160 Patent explains, prior to its inventions, a machine's ability to communicate with humans in a natural manner was a difficult technical problem in need of a technical solution. As described in the specification, in the prior art a "machine's ability to communicate with humans in a natural manner remains a difficult problem," because "a person asking a question or giving a command[] typically relies heavily on context and the domain knowledge of the target person," whereas "machine-based queries" may be "highly structured and may not be inherently natural to the human user." *Id.* at 1:22–41. The inventions described and claimed in the '209 Patent overcome these challenges in various embodiments, for example by obtaining information and presenting results in a natural manner, even in cases where the question asked or the responses received are incomplete, ambiguous, or subjective. *Id.* at 2:14–18. This is true even when utterances "include[e] imperfect information such as, incomplete thoughts, incomplete sentences, incomplete phrases, slang terminology, repeated words, word variations, synonyms, or other imperfect information." *Id.* at 1:51–57.

26. The novel features of the invention are recited in the claims. For example, Claim 12 of the '160 Patent recites:

12. A method for interpreting natural language utterances using knowledge-enhanced speech recognition engine, wherein the knowledge-enhanced speech recognition engine is configured to determine an intent and correct false recognitions of the natural language utterances, comprising:

receiving a transcription of a natural language utterance at a computer comprising the knowledge-enhanced speech recognition engine;

identifying one or more contexts that completely or partially match one or more text combinations contained in the transcription, wherein identifying the

matching contexts includes comparing the text combinations against the grammar expression entries in the context description grammar and against one or more expected contexts stored in a context stack;

scoring each of the identified matching contexts;

selecting the matching context having a highest score to determine a most likely context for the utterance; and

communicating a request to a domain agent configured to process requests in the most likely context for the utterance, the request formulated using at least one grammar expression entry in the context description grammar.

'160 Patent at Claim 12.

U.S. PATENT NO. 7,693,720

27. On April 6, 2010, the U.S. Patent Office duly and legally issued the '720 Patent, entitled "Mobile Systems And Methods For Responding To Natural Language Speech Utterance." A true and correct copy of the '720 Patent is attached hereto as **Exhibit 4**.

28. Dialect is the owner and assignee of all right, title, and interest in and to the '720 Patent, including the right to assert all causes of action arising under the '720 Patent and the right to sue and obtain any remedies for past, present, or future infringement.

29. The '720 Patent describes, among other things, a complete speech-based information query, retrieval, presentation and local or remote command environment. '720 Patent, Abstract. The invention can be used in dynamic environments such as those of mobile vehicles to control and communicate with both vehicle systems and remote systems and devices. *Id.* As the '720 Patent explains, prior to its inventions, "creating a natural language speech interface that is suitable for use in the vehicular environment has proved difficult. A general-purpose telematics system must accommodate commands and queries from a wide range of domains and from many users with diverse preferences and needs. Further, multiple vehicle occupants may want to use such systems, often simultaneously. Finally, most vehicle environments are relatively noisy, making accurate speech recognition inherently difficult." *Id.* at 1:34–42. "Managing and

evaluating complex and uncertain queries while maintaining real-time performance is a significant challenge.” *Id.* at 2:40–42. The inventions described and claimed in the ’720 Patent overcome these challenges in various embodiments, for example by providing “a complete speech-based information query, retrieval, presentation and command environment,” which “makes significant use of context, prior information, domain knowledge, and user specific profile data to achieve a natural environment for one or more users making queries or commands in multiple domains. Through this integrated approach, a speech-based natural language query, response and command environment is created. Further, at each step in the process, accommodation may be made for full or partial failure and graceful recovery.” *Id.* at 2:52–61.

30. The novel features of the invention are recited in the claims. For example, Claim 1 of the ’720 Patent recites:

A mobile system responsive to a user generated natural language speech utterance, comprising:

a speech unit connected to a computer device on a vehicle, wherein the speech unit receives a natural language speech utterance from a user and converts the received natural language speech utterance into an electronic signal; and

a natural language speech processing system connected to the computer device on the vehicle, wherein the natural language speech processing system receives, processes, and responds to the electronic signal using data received from a plurality of domain agents, wherein the natural language speech processing system includes:

a speech recognition engine that recognizes at least one of words or phrases from the electronic signal using at least the data received from the plurality of domain agents, wherein the data used by the speech recognition engine includes a plurality of dictionary and phrase entries that are dynamically updated based on at least a history of a current dialog and one or more prior dialogs associated with the user;

a parser that interprets the recognized words or phrases, wherein the parser uses at least the data received from the plurality of domain agents to interpret the recognized words or phrases, wherein the parser interprets the recognized words or phrases by:

determining a context for the natural language speech utterance;

selecting at least one of the plurality of domain agents based on the determined context; and

transforming the recognized words or phrases into at least one of a question or a command, wherein the at least one question or command is formulated in a grammar that the selected domain agent uses to process the formulated question or command; and

an agent architecture that communicatively couples services of each of an agent manager, a system agent, the plurality of domain agents, and an agent library that includes one or more utilities that can be used by the system agent and the plurality of domain agents, wherein the selected domain agent uses the communicatively coupled services to create a response to the formulated question or command and format the response for presentation to the user.

'720 Patent at Claim 1.

U.S. PATENT NO. 8,015,006

31. On September 6, 2011, the U.S. Patent Office duly and legally issued the '006 Patent, entitled "Systems And Methods For Processing Natural Language Speech Utterances With Context-Specific Domain Agents." A true and correct copy of the '006 Patent is attached hereto as **Exhibit 5**.

32. Dialect is the owner and assignee of all right, title, and interest in and to the '006 Patent, including the right to assert all causes of action arising under the '006 Patent and the right to sue and obtain any remedies for past, present, or future infringement.

33. The '006 Patent describes, among other things, novel systems and methods for receiving natural language queries and/or commands and executing the queries and/or commands. '006 Patent, Abstract. The claimed invention makes significant use of context, prior information, domain knowledge, and user specific profile data to achieve a natural environment for one or more users. *Id.* As the '006 Patent explains, prior to its inventions, a machine's ability to communicate with humans in a natural manner was a difficult technical problem in need of a technical solution. As described in the specification, in the prior art "human questions and machine processing of

queries may be fundamentally incompatible,” because “a person asking a question or giving a command typically relies heavily on context and the domain knowledge of the person answering,” whereas “machine-based queries” are “highly structured and are not inherently natural to the human user.” *Id.* at 1:27–41. The inventions described and claimed in the ’209 Patent overcome these challenges in various embodiments, for example by providing a system that uses domain agents to organize domain specific behavior and information. *Id.* at 2:53–3:7. The inventions in various embodiments further include a system that can “determine the user’s identity by voice and name for each utterance,” so that “[r]ecognized words and phrases may be tagged with this identity in all further processing” for security and other purposes. *Id.* at 16:60–17:4.

34. The novel features of the invention are recited in the claims. For example, Claim 5 of the ’006 Patent recites:

A method for processing natural language speech utterances with context-specific domain agents, comprising:

receiving, at a speech unit coupled to a processing device, a natural language speech utterance that contains a request;

recognizing, at a speech recognition engine coupled to the processing device, one or more words or phrases contained in the utterance using information in one or more dictionary and phrase tables;

parsing, at a parser coupled to the processing device, information relating to the utterance to determine a meaning associated with the utterance and a context associated with the request contained in the utterance, wherein the parsed information includes the one or more recognized words or phrases;

formulating, at the parser, the request contained in the utterance in accordance with a grammar used by a domain agent associated with the determined context, wherein formulating the request in accordance with the grammar used by the domain agent includes:

determining one or more required values and one or more optional values associated with formulating the request in the grammar used by the domain agent;

extracting one or more criteria and one or more parameters from one or more keywords contained in the one or more recognized words or phrases, wherein the parser extracts the one or more criteria and the one or more parameters using procedures sensitive to the determined context;

inferring one or more further criteria and one or more further parameters associated with the request using a dynamic set of prior probabilities or fuzzy possibilities; and

transforming the one or more extracted criteria, the one or more extracted parameters, the one or more inferred criteria, and the one or more inferred parameters into one or more tokens having a format compatible with the grammar used by the domain agent, wherein the one or more tokens include all the required values and one or more of the optional values associated with formulating the request in the grammar used by the domain agent;

processing the formulated request with the domain agent associated with the determined context to generate a response to the utterance; and

presenting the generated response to the utterance via the speech unit..

'006 Patent at Claim 5.

U.S. PATENT NO. 8,447,607

35. On May 21, 2013, the U.S. Patent Office duly and legally issued the '607 Patent, entitled "Mobile Systems And Methods Of Supporting Natural Language Human-Machine Interactions." A true and correct copy of the '607 Patent is attached hereto as **Exhibit 6**.

36. Dialect is the owner and assignee of all right, title, and interest in and to the '607 Patent, including the right to assert all causes of action arising under the '607 Patent and the right to sue and obtain any remedies for past, present, or future infringement.

37. The '607 Patent describes, among other things, a novel mobile system that identifies and uses context, prior information, domain knowledge, and user specific profile data to achieve a natural environment for users to submit natural language requests. '607 Patent, Abstract. The claimed invention creates, stores and uses extensive personal profile information for each user to improve the reliability of determining the context of a request and presenting the expected results. *Id.* As the '607 Patent explains, prior to its inventions, a machine's ability to communicate with humans in a natural manner was a difficult technical problem in need of a technical solution. As described in the specification, under the existing systems and devices "verbal communications

and machine processing of requests that are extracted from the verbal communications may be fundamentally incompatible,” because the existing systems and devices use requests that are “highly structured and may not be inherently natural to the human user.” *Id.* at 1:56–61. “Cognitive research on human interaction,” however, “shows that verbal communication, such as a person asking a question or giving a command, typically relies heavily on context and domain knowledge of the target person.” *Id.* at 1:52–55. The inventions described and claimed in the ’607 Patent overcome these challenges in various embodiments, for example by providing a system that uses “multi-modal communications that enable displaying of non-speech search results on a graphical interface” in conjunction with “speech commands” to execute requests. *Id.* at 21:49–60.

38. The novel features of the invention are recited in the claims. For example, Claim 14 of the ’607 Patent recites:

A device for processing natural language inputs, comprising one or more processors configured to:

receive a natural language utterance from a user;

identify the user who provided the natural language utterance;

generate a speech-based transcription based on a personal cognitive model associated with the user and a general cognitive model, wherein the personal cognitive model includes information on one or more prior interactions between the device and the user, and wherein the general cognitive model includes information on one or more prior interactions between the device and a plurality of users;

identify, from among a plurality of entries that are in a context stack and that are each indicative of context, an entry that matches information in the speech-based transcription;

identify a domain agent associated with the entry in the context stack; determine a request based on the speech-based transcription; and

communicate the request to the domain agent, wherein the domain agent is configured to generate a response to the user.

’607 Patent at Claim 14.

U.S. PATENT NO. 8,849,652

39. On September 30, 2014, the U.S. Patent Office duly and legally issued the '652 Patent, entitled "Mobile Systems And Methods Of Supporting Natural Language Human-Machine Interactions." A true and correct copy of the '652 Patent is attached hereto as **Exhibit 7**.

40. Dialect is the owner and assignee of all right, title, and interest in and to the '652 Patent, including the right to assert all causes of action arising under the '652 Patent and the right to sue and obtain any remedies for past, present, or future infringement.

41. The '652 Patent describes, among other things, a novel mobile system that identifies and uses context, prior information, domain knowledge, and user specific profile data to achieve a natural environment for users to submit natural language requests. '652 Patent, Abstract. The claimed invention creates, stores and uses extensive personal profile information for each user to improve the reliability of determining the context of a request and presenting the expected results. *Id.* As the '652 Patent explains, prior to its inventions, a machine's ability to communicate with humans in a natural manner was a difficult technical problem in need of a technical solution. As described in the specification, under the existing systems and devices "verbal communications and machine processing of requests that are extracted from the verbal communications may be fundamentally incompatible," because the existing systems and devices use requests that are "highly structured and may not be inherently natural to the human user." *Id.* at 1:58–63. "Cognitive research on human interaction," however, "shows that verbal communication, such as a person asking a question or giving a command, typically relies heavily on context and domain knowledge of the target person." *Id.* at 1:54–57. The inventions described and claimed in the '652 Patent overcome these challenges in various embodiments, for example by providing a system that uses context information determined from a command or request, comparing it against one or more

words to create a score for context entries and generating a context stack to enable future requests.

Id. at 4:5–55. The context stacks can be synchronized across multiple devices. *Id.* at 4:20–36.

42. The novel features of the invention are recited in the claims. For example, Claim 1 of the '652 Patent recites:

A system for processing natural language utterances where recognized words of the natural language utterances alone are insufficient to completely determine one or more commands or requests, the system comprising:

one or more physical processors programmed with one or more computer program instructions which, when executed, cause the one or more physical processors to:

generate a first context stack associated with a first device, the first context stack comprising context information that corresponds to a plurality of prior utterances;

synchronize the first context stack with a second context stack associated with a second device such that the context information of the first context stack is updated based on related context information of the second context stack;

receive a natural language utterance associated with a command or request; determine one or more words of the natural language utterance by performing speech recognition on the natural language utterance; and determine the command or request based on the one or more words and the updated context information.

'652 Patent at Claim 1.

U.S. PATENT NO. 9,031,845

43. On May 12, 2015, the U.S. Patent Office duly and legally issued the '845 Patent, entitled "Mobile Systems And Methods For Responding To Natural Language Speech Utterance."

A true and correct copy of the '845 Patent is attached hereto as **Exhibit 8**.

44. Dialect is the owner and assignee of all right, title, and interest in and to the '845 Patent, including the right to assert all causes of action arising under the '845 Patent and the right to sue and obtain any remedies for past, present, or future infringement.

45. The '845 Patent describes, among other things, a complete speech-based information query, retrieval, presentation and local or remote command environment. '845 Patent, Abstract. The invention can be used in dynamic environments such as those of mobile vehicles to control and communicate with both vehicle systems and remote systems and devices. *Id.* As the '845 Patent explains, prior to its inventions, “creating a natural language speech interface that is suitable for use in the vehicular environment has proved difficult. A general-purpose telematics system must accommodate commands and queries from a wide range of domains and from many users with diverse preferences and needs. Further, multiple vehicle occupants may want to use such systems, often simultaneously. Finally, most vehicle environments are relatively noisy, making accurate speech recognition inherently difficult.” *Id.* at 1:38–46. In some cases, “multiple queries, perhaps with several parts, need to be made to multiple data sources, which can be both local or on a network.” *Id.* at 2:25–27. The inventions described and claimed in the '845 Patent overcome these challenges in various embodiments, for example by providing “a complete speech-based information query, retrieval, presentation and command environment,” which “makes significant use of context, prior information, domain knowledge, and user specific profile data to achieve a natural environment for one or more users making queries or commands in multiple domains. Through this integrated approach, a speech-based natural language query, response and command environment is created. Further, at each step in the process, accommodation may be made for full or partial failure and graceful recovery.” *Id.* at 2:52–61. “The invention can be used for generalized local or network information query, retrieval and presentation in a mobile environment.” *Id.* at 6:43–45.

46. The novel features of the invention are recited in the claims. For example, Claim 1 of the '845 Patent recites:

A mobile system for processing natural language utterances, comprising:
one or more physical processors at a vehicle that are programmed to execute one or more computer program instructions which, when executed, cause the one or more physical processors to:

- receive a natural language utterance associated with a user;
- perform speech recognition on the natural language utterance;
- parse and interpret the speech recognized natural language utterance;
- determine a domain and a context that are associated with the parsed and interpreted natural language utterance;
- formulate a command or query based on the domain and the context;
determine whether the command or query is to be executed on-board or off-board the vehicle;
- execute the command or query at the vehicle in response to a determination that the command or query is to be executed on-board the vehicle; and
- invoke a device that communicates wirelessly over a wide area network to process the command or query such that the command or query is executed off-board the vehicle in response to a determination that the command or query is to be executed off-board the vehicle.

'845 Patent at Claim 1.

DEFENDANTS' USE OF THE PATENTED TECHNOLOGY

47. Google/Alphabet is a digital conglomerate that provides internet advertising services, internet cloud services, and internet-enabled hardware and software products in the United States and worldwide. In 2022, Google/Alphabet reported consolidated revenues of over \$282 billion.

48. Among the products and services that Google/Alphabet makes, uses, sells, and/or offers to sell in the United States, and/or imports into the United States, are: the Google Assistant Platform, including Google Assistant's Conversational Actions, App Actions, smart home Actions, Google Assistant for Android Auto, and/or media Actions; servers, network infrastructure, smartphones, tablets, and internet of things ("IoT") devices such as Google Home devices comprising software to access such Google Assistant Platform products and services alone

or in combination with Android software, Android Auto software, and/or Android Automotive OS software; and Dialogflow virtual agents comprising Google Assistant Platform technology (collectively, the “Accused Google Assistant Products and Services”), which infringe the Asserted Patents as described in the counts below.

49. On information and belief, Google/Alphabet also provides third-party developers of automobiles, electronic hardware, and software with interfaces to the Accused Google Assistant Products and Services, in order to encourage those developers to design, make, use, import into the United States, offer to sell, and sell products and services capable of being voice-controlled by the Accused Google Assistant Products and Services.

FIRST COUNT
(Infringement of U.S Patent No. 7,398,209)

50. Dialect incorporates by reference the allegations set forth in Paragraphs 1–49 as though fully set forth herein.

51. The claims of the ’209 Patent are valid and enforceable.

52. The claims of the ’209 Patent are directed to patentable subject matter. Particularly, the ’209 Patent is directed to a novel, tangible voice recognition system. The inventive, tangible claimed structures of the ’209 Patent improve on the natural language processing of a natural language utterance by a user. The claimed inventions provide specific concrete solutions to the problem of speech recognition in existing systems.

53. In violation of 35 U.S.C. § 271(a) and without authority from Plaintiff, Google/Alphabet has directly infringed by making, using, offering for sale, selling, and/or importing into the state of Delaware, this judicial district, and elsewhere in the United States products and services that embody the invention disclosed and claimed in the ’209 Patent, including at least the Accused Google Assistant Products and Services.

54. Each of the Accused Google Assistant Products and Services contains elements that are identical or equivalent to each claimed element of the patented invention claimed by at least Claim 1 of the '209 Patent.

55. Each of the Accused Google Assistant Products and Services comprises a method responsive to a user generated natural language speech utterance.

56. For example, Google describes Google Assistant as responding to a user generated natural language speech utterance.¹

What you can ask Google Assistant

You can ask Google Assistant for info and for help with everyday tasks.

Important: Some queries won't work on all devices and in all languages.

For ideas about what Google Assistant can help with, ask "What can you do?"

What Google Assistant can do

Get local info

- **Weather:** What's the weather today?
- **Food:** Find pizza restaurants nearby.
- **Business hours:** Is Walgreens still open?
- **Navigation:** Navigate home.

Plan your day

- **Traffic:** How's the traffic to work?
- **Reminders:** Remind me to do laundry this evening. Remind me to call Mom every Sunday.
- **Calendar events:** When's my first meeting today? Add a meeting to my calendar.
- **Flights:** Is United flight 1463 on time?

Ask Google

- **Game updates:** Who won the Warriors game?
- **Calculations:** What's 20% of 80?
- **Dictionary:** What does "gregarious" mean?
- **Translations:** How do I say "Nice to meet you" in French?
- **Finance:** How's the S&P 500 doing?
- **Unit conversions:** How many kilometers in a mile?
- **Search:** Search for summer vacation ideas.
- **Image search:** Find pictures of kittens.
- **Web answer:** How do you remove wine stains from a rug?

¹ <https://support.google.com/assistant/answer/7172842?hl=en>

57. Each of the Accused Google Assistant Products and Services comprises receiving the user generated natural language speech utterance, the received user utterance containing at least one request.

58. For example, Google describes Google Assistant as receiving user generated natural language speech utterances containing at least one request.²

What you can ask Google Assistant

You can ask Google Assistant for info and for help with everyday tasks.

Important: Some queries won't work on all devices and in all languages.

For ideas about what Google Assistant can help with, ask "What can you do?"

What Google Assistant can do

Get local info

- **Weather:** What's the weather today?
- **Food:** Find pizza restaurants nearby.
- **Business hours:** Is Walgreens still open?
- **Navigation:** Navigate home.

Plan your day

- **Traffic:** How's the traffic to work?
- **Reminders:** Remind me to do laundry this evening. Remind me to call Mom every Sunday.
- **Calendar events:** When's my first meeting today? Add a meeting to my calendar.
- **Flights:** Is United flight 1463 on time?

Ask Google

- **Game updates:** Who won the Warriors game?
- **Calculations:** What's 20% of 80?
- **Dictionary:** What does "gregarious" mean?
- **Translations:** How do I say "Nice to meet you" in French?
- **Finance:** How's the S&P 500 doing?
- **Unit conversions:** How many kilometers in a mile?
- **Search:** Search for summer vacation ideas.
- **Image search:** Find pictures of kittens.
- **Web answer:** How do you remove wine stains from a rug?

Google further describes its Assistant as “process[ing] the question and get[ting] text out of it.”³

² *Id.*

³ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

Got it. Let's say I ask Assistant something pretty straightforward, like, "Hey Google, where's the closest dog park?" – how would Assistant understand what I'm saying and respond to my query?

The first step is for Assistant to process that "Hey Google" and realize, "Ah, it looks like this person is now speaking to me and wants something from me."

Assistant picks up the rest of the audio, processes the question and gets text out of it. As it does that, it tries to understand what your sentence is about. What type of intention do you have?

59. Each of the Accused Google Assistant Products and Services comprises maintaining a dynamic set of prior probabilities or fuzzy possibilities usable at each stage of processing the received user utterance.

60. For example, Google describes Google Assistant as analyzing the text of the question in combination with "useful information such as recent requests."⁴

Understanding your request

If you interact with Assistant by voice, our speech recognition technology converts your request to text. Next, Assistant analyzes the text, in combination with useful information such as recent requests or the type of device you are using, to identify possible interpretations.

For example, if you say "Hey Google, stop," you might want to stop one of two timers that are running, music that's playing, or a routine that's running. You might also want to see search results for "Stop," or something else entirely.

To weigh the options, Assistant compiles a list of the different interpretations of your request and how it would respond to each one. The next step is to rank these options to find the best way to fulfill your request.

61. Each of the Accused Google Assistant Products and Services comprises recognizing words and phrases contained in the received utterance using information in one or more dictionary and phrase tables.

62. For example, Google describes Google Assistant as using "trainingPhrases[]" to "allow Google's NLU to automatically" match words or phrases found in the user input.⁵

⁴ <https://developers.google.com/assistant/howassistantworks/responses>

⁵ <https://developers.google.com/assistant/actionssdk/reference/rest/Shared.Types/Intent>

<code>trainingPhrases[]</code>	<p>string</p> <p>Training phrases allow Google's NLU to automatically match intents with user input. The more unique phrases that are provided, the better chance this intent will be matched. The following is the format of training phrase part which are annotated. Note that <code>auto</code> field is optional and the default behavior when <code>auto</code> is not specified is equivalent to <code>auto=false</code>. (<code>\$(paramName) '<sample text>' auto=<true or false></code>) <code>auto = true</code> means the part was auto annotated by NLU. <code>auto = false</code> means the part was annotated by the user. This is the default when <code>auto</code> is not specified. Example: "Book a flight from (<code>\$source 'San Francisco'</code> <code>auto=false</code>) to (<code>\$dest 'Vancouver'</code>)"</p>
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Google further describes its Assistant as using “define[d] custom training phrases” to “augment[] the Assistant NLU.”⁶

- **User intents** let you extend Assistant's ability to understand user requests that are specific to your brand and services. You define custom training phrases within an intent, which in turn generates an intent's language model. That language model augments the Assistant NLU, increasing its ability to understand even more.
- **System intents** have training data or other non-conversational input signals defined by Assistant. This means you don't need to define training phrases for these intents. Assistant matches these intents in a standard way, during well-known system events such as main invocation or when users don't provide any input.



63. Each of the Accused Google Assistant Products and Services comprises parsing the recognized words and phrases to determine a meaning of the utterance, wherein determining the meaning includes determining a context for the at least one request contained in the utterance based on one or more keywords contained in the recognized words and phrases.

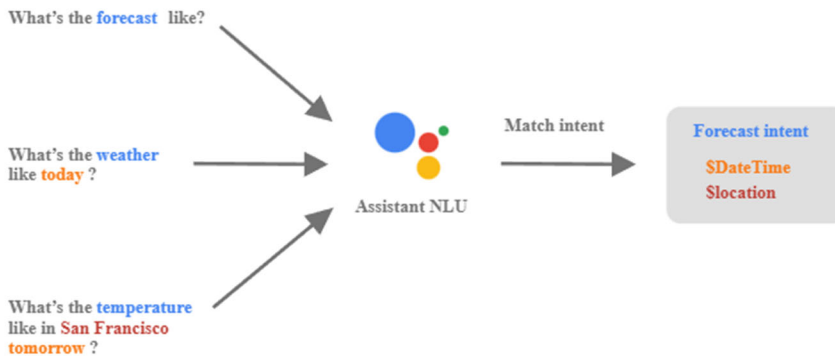
64. For example, Google describes Google Assistant as determining a context for the request in the natural language utterance based on one or more keywords.⁷

⁶ <https://developers.google.com/assistant/conversational/intents>

⁷ <https://developers.google.com/assistant/conversational/overview>

For example, consider an easy user request like, "What's the forecast like today?" Other users might also ask, "What's the weather like right now?" or "What's the temperature like in San Francisco tomorrow?" Even with this simple question, you can see that conversational experiences are hard to implement, because interpreting and processing natural language requires a very robust language parser that's capable of understanding the nuances of language. Your code would have to handle all these different types of requests (and potentially many more) to carry out the same logic: looking up some forecast information for a time and location. For this reason, a traditional computer interface requires well-known, standard input requests to the detriment of the user experience, because it's easier to handle highly structured input.

However, when you build Conversational Actions, Assistant handles the natural language understanding (NLU) for you, so you can build open-ended, conversational interfaces easily. These interface tools let you understand the vast and varied nuances of human language and translate that to standard and structured meaning that your apps and services can understand. Let's take a look at how an Action might handle the previous examples for weather forecast requests.



Google states that its Assistant “gets text out” of the question and identifies “the semantics, i.e. the meaning, of your question.”⁸

Got it. Let's say I ask Assistant something pretty straightforward, like, “Hey Google, where's the closest dog park?” – how would Assistant understand what I'm saying and respond to my query?

The first step is for Assistant to process that “Hey Google” and realize, “Ah, it looks like this person is now speaking to me and wants something from me.”

Assistant picks up the rest of the audio, processes the question and gets text out of it. As it does that, it tries to understand what your sentence is about. What type of intention do you have?

To determine this, Assistant will parse the text of your question with another neural network that tries to identify the semantics, i.e. the meaning, of your question.

Google describes the Assistant’s NLU models as understanding context, “meaning it knows exactly what you’re trying to do with a command.”⁹

⁸ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

⁹ <https://blog.google/products/assistant/loud-and-clear-ai-improving-assistant-conversations/>

A good conversation is all about context

Assistant's timers are a popular tool, and plenty of us set more than one of them at the same time. Maybe you've got a 10-minute timer for dinner going at the same time as another to remind the kids to start their homework in 20 minutes. You might fumble and stop mid sentence to correct how long the timer should be set for, or maybe you don't use the exact same phrase to cancel it as you did to create it. Like in any conversation, context matters and Assistant needs to be flexible enough to understand what you're referring to when you ask for help.

To help with these kinds of conversational complexities, we fully rebuilt Assistant's NLU models so it can now more accurately understand context while also improving its "reference resolution" — meaning it knows exactly what you're trying to do with a command. This upgrade uses machine learning technology powered by [state-of-the-art BERT](#), a technology we invented in 2018 and first brought to [Search](#) that makes it possible to process words in relation to all the other words in a sentence, rather than one-by-one in order. Because of these improvements, Assistant can now respond nearly 100 percent accurately to alarms and timer tasks. And over time, we'll bring this capability to other use cases, so Assistant can learn to better understand you.

65. Each of the Accused Google Assistant Products and Services comprises selecting at least one domain agent based on the determined meaning, the selected domain agent being an autonomous executable that receives, processes, and responds to requests associated with the determined context.

66. For example, Google describes Google Assistant as selecting, in the example below, Maps or Search to respond to requests associated with the determined context.¹⁰

¹⁰ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

To make it a little more complicated: If I were to ask something a bit more ambiguous, like, “Hey Google, what is the most popular dog?” – how would it know if I meant dog breed, dog name or the most popular famous dog?

In the first example, Assistant has to understand that you’re looking for a location (“where is”) and what you’re looking for (“a dog park”), so it makes sense to use Maps to help. In this, Assistant would recognize it’s a more open-ended question and call upon Search instead. What this really comes down to is identifying the best interpretation. One thing that is helpful is that Assistant can rank how satisfied previous users were with similar responses to similar questions – that can help it decide how certain it is of its interpretation. Ultimately, that question would go to Search, and the results would be proposed to you with whatever formatting is best for your device.

Google’s own research papers describe understanding user utterances by, in part, “detecting the domain of the utterance.”¹¹

1. Introduction

In traditional goal-oriented dialogue systems, user utterances are typically understood in terms of hand-designed semantic frames comprised of domains, intents and slots [1]. Understanding the user utterance involves (i) detecting the domain of the utterance, (ii) classifying the intent of the utterance based on

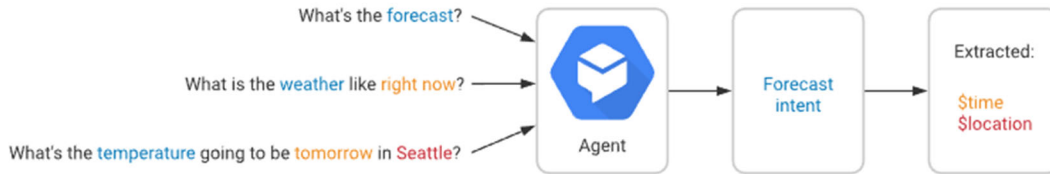
67. Each of the Accused Google Assistant Products and Services comprises formulating the at least one request contained in the utterance in accordance with a grammar used by the selected domain agent to process requests associated with the determined context.

68. For example, Google describes Google Assistant as formulating requests contained in the user utterance in accordance with a specific structure for a weather query.¹²

¹¹ <https://research.google.com/pubs/archive/553ee0ffc2c91cbb340860b5f109a3f413438de2.pdf>

¹² <https://cloud.google.com/dialogflow/es/docs/intents-overview>

For example, you could create a weather agent that recognizes and responds to end-user questions about the weather. You would likely define an intent for questions about the weather forecast. If an end-user says "What's the forecast?", Dialogflow would match that end-user expression to the forecast intent. You can also define your intent to extract useful information from the end-user expression, like a time or location for the desired weather forecast. This extracted data is important for your system to perform a weather query for the end-user.



Google further describes how the request contained in the user utterance can “include parameters that partially or entirely fill” parameters for a request.¹³

In many cases, a previous intent match can include parameters that partially or entirely fill a corresponding scene's slot values. In these cases, all slots filled by intent parameters map to the scene's slot filling if the slot name matches the intent parameter name.

For example, if a user matches an intent to order a beverage by saying "I want to order a large vanilla coffee", existing slots for size, flavor, and beverage type are considered filled in the corresponding scene if that scene defines same slots.

69. Each of the Accused Google Assistant Products and Services comprises invoking the selected domain agent to process the formulated request.

70. For example, Google describes Google Assistant as invoking Maps to return results of a query.¹⁴

In this case, it will figure out that it's a question it needs to search for – it's not you asking to turn on your lights or anything like that. And since this is a location-based question, if your settings allow it, Assistant can send the geographic data of your device to Google Maps to return the results of which dog park is near you.

¹³

https://developers.google.com/assistant/conversational/build/conversation#slot_value_mapping

¹⁴ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

71. Each of the Accused Google Assistant Products and Services comprises presenting results of the processed request to the user, the presented results generated as a result of the invoked domain agent processing the formulated request.

72. For example, Google describes Google Assistant as providing the results “in the appropriate format for your device.”¹⁵

Then Assistant will sort its possible answers based on things like how sure it is that it understood you correctly and how relevant its various potential answers are. It will decide on the best answer, then provide it in the appropriate format for your device. It might be just a *speaker*, in which case it can give you spoken information. If you have a display in front of you, it could show you a map with walking directions.

73. Plaintiff anticipates identifying additional evidence and asserted claims in accordance with the case schedule and Plaintiff’s discovery obligations.

74. Google/Alphabet has long known about the ’209 Patent.

75. On information and belief, Google/Alphabet actively monitors patent activity through information that is available to the public from the United States Patent and Trademark Office and from commercial and foreign government databases (including commercial databases operated by Google/Alphabet). For example, on or about October 6, 2014, the U.S. Patent Office identified the ’209 Patent to Google as prior art to Google’s own United States patent application no. 13/888,770. On at least two other occasions Google has disclosed to the U.S. Patent Office the published patent application corresponding to the ’209 Patent, U.S. Application Publication No. 2004/0044516, as prior art to Google’s own U.S. patent applications. On information and belief, on one or more of those occasions Google/Alphabet intentionally failed to disclose to the U.S.

¹⁵ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

Patent Office that the '209 Patent had issued from that published application, with the intent to conceal Google/Alphabet's knowledge of the issued '209 Patent.

76. Google/Alphabet knew or should have known that Google/Alphabet's actions infringe one or more of the claims of the '209 Patent because Google/Alphabet has the technical expertise to understand the scope and content of the '209 Patent, because Google/Alphabet is a major provider of voice recognition products and services, and because Google/Alphabet knows the design, function, and operation of the Accused Google Assistant Products and Services, as well as the nature and extent of their use by others. At a minimum, Google/Assistant has knowledge of the '209 Patent at least as of the filing of this Complaint.

77. Further, on information and belief, Google/Alphabet has actively induced and/or contributed to infringement of at least Claim 1 of the '209 Patent in violation of at least 35 U.S.C. § 271(b) and (c).

78. Users of the Accused Google Assistant Products and Services directly infringe at least Claim 1 of the '209 Patent when they use the Accused Google Assistant Products and Services in the ordinary, customary, and intended way.

79. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) include, without limitation and with specific intent to encourage infringement, knowingly inducing businesses and consumers to use the Accused Google Assistant Products and Services within the United States in the ordinary, customary, and intended way by, directly or through intermediaries, supplying the Accused Google Assistant Products and Services to businesses and consumers within the United States, and instructing and encouraging such businesses and consumers to use the Accused Google Assistant Products and Services in the

ordinary, customary, and intended way, which Google/Alphabet knew infringes at least Claim 1 of the '209 Patent, or, alternatively, was willfully blind to the infringement.

80. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) further include, without limitation and with specific intent to encourage the infringement, knowingly inducing Google/Alphabet's customers to commit acts of infringement with respect to the Accused Google Assistant Products and Services within the United States, by, directly or through intermediaries, instructing and encouraging such customers to import, make, use, sell, offer to sell, or otherwise commit acts of infringement with respect to the Accused Google Assistant Products and Services in the United States, which Google/Alphabet knew infringes at least Claim 1 of the '209 Patent, or, alternatively, was willfully blind to the infringement.

81. On information and belief, in violation of 35 U.S.C. § 271(c), Google/Alphabet's contributory infringement further includes offering to sell or selling within the United States, or importing into the United States, components of the patented invention of and/or a material or apparatus for use in practicing at least Claim 1 of the '209 Patent, constituting a material part of the invention. On information and belief, Google/Alphabet knows and has known the same to be especially made or especially adapted for use in an infringement of the '209 Patent, and such components are not a staple article or commodity of commerce suitable for substantial noninfringing use.

82. Google/Alphabet is not licensed or otherwise authorized to practice the claims of the '209 Patent.

83. Thus, by its acts, Google/Alphabet has injured Dialect and is liable to Dialect for directly and/or indirectly infringing one or more claims of the '209 Patent, whether literally or under the doctrine of equivalents, including without limitation Claim 1.

84. As a result of Google/Alphabet's infringement of the '209 Patent, Dialect has suffered monetary damages, and seeks recovery, in an amount to be proven at trial, adequate to compensate for Google/Alphabet's infringement, but in no event less than a reasonable royalty with interest and costs.

85. On information and belief, in addition to Google/Alphabet's knowledge of the '209 Patent as set forth above both prior to and as a result of the filing of this Complaint, Google/Alphabet has had, and continues to have, the specific intent to infringe, through its deliberate and intentional infringement or, alternatively, through its willfully blind disregard of the '209 Patent by knowing there was a high probability of infringement but taking deliberate actions to avoid confirming that infringement. The citation of the '209 Patent and/or its published patent application as prior art to Google/Alphabet's own patent applications supports an inference that Google/Alphabet's managers, engineers, employees, and/or agents were aware or should have been aware of the '209 Patent, yet willfully continued Google/Alphabet's infringing conduct. The filing of this action has also made Google/Alphabet aware of the unjustifiably high risk that its actions constituted and continue to constitute infringement of the '209 Patent. On information and belief, discovery will reveal additional facts and circumstances from which Google/Alphabet's knowledge and intent to infringe (or willful indifference), both before and after the filing of this action, may be inferred.

86. Accordingly, Google/Alphabet's infringement of the '209 Patent has also been and continues to be deliberate, intentional, and willful, and this is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees and costs pursuant to 35 U.S.C. §§ 284 and 285.

87. Google/Alphabet's infringement of Dialect's rights under the '209 Patent will continue to damage Dialect, causing irreparable harm for which there is no adequate remedy at law, unless enjoined by this Court.

SECOND COUNT
(Infringement of U.S Patent No. 7,502,738)

88. Dialect incorporates by reference the allegations set forth in Paragraphs 1–87 as though fully set forth herein.

89. The claims of the '738 Patent are valid and enforceable.

90. The claims of the '738 Patent are directed to patentable subject matter. Particularly, the '738 Patent is directed to a novel, tangible voice recognition system. The inventive, tangible claimed structures of the '738 Patent improve on the natural language processing of a natural language utterance by a user. The claimed inventions provide specific concrete solutions to the problem of speech recognition in existing systems.

91. In violation of 35 U.S.C. § 271(a) and without authority from Plaintiff, Google/Alphabet has directly infringed by making, using, offering for sale, selling, and/or importing into the state of Delaware, this judicial district, and elsewhere in the United States products and services that embody the invention disclosed and claimed in the '738 Patent, including at least the Accused Google Assistant Products and Services.

92. Each of the Accused Google Assistant Products and Services contains elements that are identical or equivalent to each claimed element of the patented invention pointed out by at least Claim 1 of the '738 Patent.

93. Each of the Accused Google Assistant Products and Services comprises a system responsive to a user generated natural language speech utterance.

94. For example, Google describes Google Assistant as responding to a user generated natural language speech utterance.¹⁶

What you can ask Google Assistant

You can ask Google Assistant for info and for help with everyday tasks.

Important: Some queries won't work on all devices and in all languages.

For ideas about what Google Assistant can help with, ask "What can you do?"

What Google Assistant can do

Get local info

- **Weather:** What's the weather today?
- **Food:** Find pizza restaurants nearby.
- **Business hours:** Is Walgreens still open?
- **Navigation:** Navigate home.

Plan your day

- **Traffic:** How's the traffic to work?
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- **Game updates:** Who won the Warriors game?
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- **Web answer:** How do you remove wine stains from a rug?

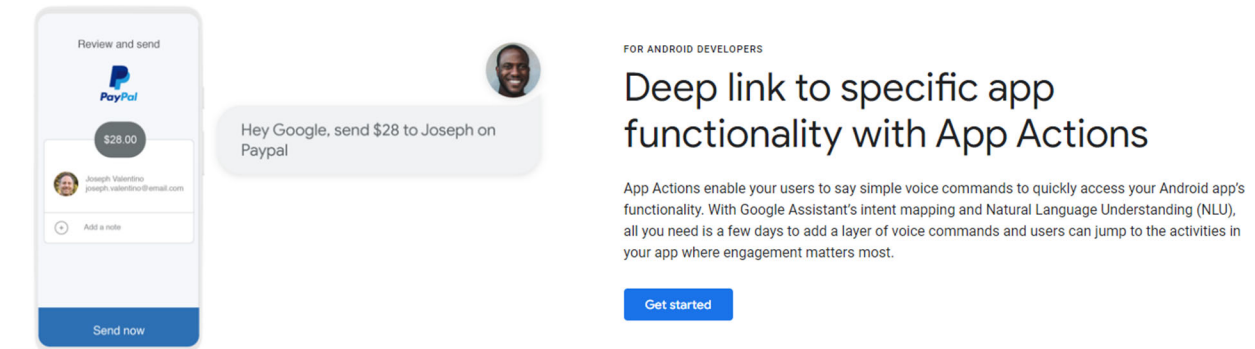
95. Each of the Accused Google Assistant Products and Services comprises an agent architecture that includes a plurality of domain agents, each of the plurality of domain agents being an autonomous executable configured to receive, process, and respond to requests associated with a respective context.

¹⁶ <https://support.google.com/assistant/answer/7172842?hl=en>

96. For example, Google describes Google Assistant as allowing developers to develop applications in a variety of contexts.¹⁷

- ▶ Common
- ▶ Communications
- ▶ Finance
- ▶ Food and drink
- ▶ Games
- ▶ Health and fitness
- ▶ Productivity
- ▶ Shopping
- ▶ Social
- ▶ Transportation
- ▶ Travel

Google further describes the ability of Google Assistant to link directly to applications.¹⁸



97. Each of the Accused Google Assistant Products and Services comprises a parser configured to determine a context for one or more keywords contained in the utterance and to determine a meaning of the utterance based on the determined context, wherein the parser selects

¹⁷ <https://developer.android.com/reference/app-actions/built-in-intents/bii-index>

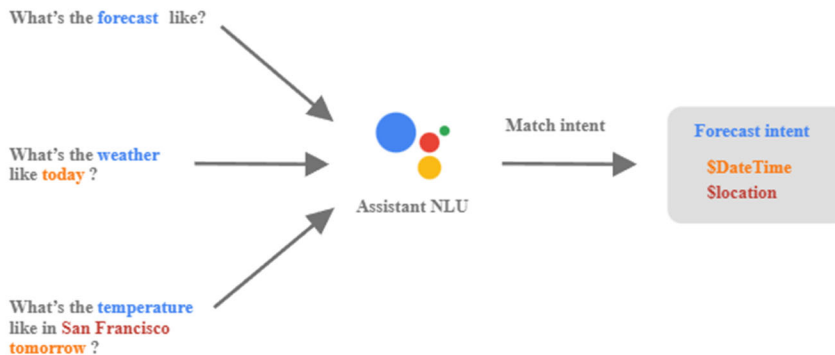
¹⁸ <https://developers.google.com/assistant/app>

at least one of the plurality of domain agents based on the determined meaning, wherein the selected domain agent is configured to receive, process, and respond to requests associated with the determined context.

98. For example, Google describes Google Assistant as determining a context for the request in the natural language utterance based on one or more keywords.¹⁹

For example, consider an easy user request like, "What's the forecast like today?" Other users might also ask, "What's the weather like right now?" or "What's the temperature like in San Francisco tomorrow?" Even with this simple question, you can see that conversational experiences are hard to implement, because interpreting and processing natural language requires a very robust language parser that's capable of understanding the nuances of language. Your code would have to handle all these different types of requests (and potentially many more) to carry out the same logic: looking up some forecast information for a time and location. For this reason, a traditional computer interface requires well-known, standard input requests to the detriment of the user experience, because it's easier to handle highly structured input.

However, when you build Conversational Actions, Assistant handles the natural language understanding (NLU) for you, so you can build open-ended, conversational interfaces easily. These interface tools let you understand the vast and varied nuances of human language and translate that to standard and structured meaning that your apps and services can understand. Let's take a look at how an Action might handle the previous examples for weather forecast requests.



Google states that its Assistant “gets text out” of the question and identifies “the semantics, i.e. the meaning, of your question” and then selects, for example, Google Maps.²⁰

¹⁹ <https://developers.google.com/assistant/conversational/overview>

²⁰ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

Got it. Let's say I ask Assistant something pretty straightforward, like, "Hey Google, where's the closest dog park?" – how would Assistant understand what I'm saying and respond to my query?

The first step is for Assistant to process that "Hey Google" and realize, "Ah, it looks like this person is now speaking to me and wants something from me."

Assistant picks up the rest of the audio, processes the question and gets text out of it. As it does that, it tries to understand what your sentence is about. What type of intention do you have?

To determine this, Assistant will parse the text of your question with another neural network that tries to identify the semantics, i.e. the meaning, of your question.

In this case, it will figure out that it's a question it needs to search for – it's not you asking to turn on your lights or anything like that. And since this is a location-based question, if your settings allow it, Assistant can send the geographic data of your device to Google Maps to return the results of which dog park is near you.

Google describes the Assistant's NLU models as understanding context, "meaning it knows exactly what you're trying to do with a command."²¹

A good conversation is all about context

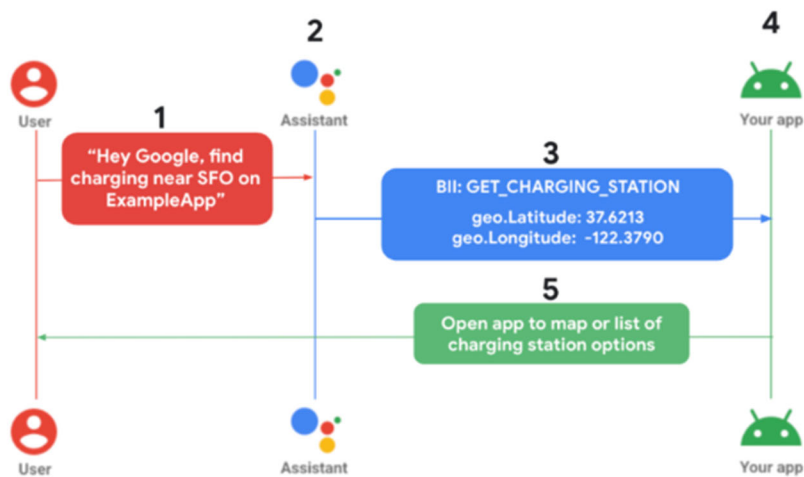
Assistant's timers are a popular tool, and plenty of us set more than one of them at the same time. Maybe you've got a 10-minute timer for dinner going at the same time as another to remind the kids to start their homework in 20 minutes. You might fumble and stop mid sentence to correct how long the timer should be set for, or maybe you don't use the exact same phrase to cancel it as you did to create it. Like in any conversation, context matters and Assistant needs to be flexible enough to understand what you're referring to when you ask for help.

To help with these kinds of conversational complexities, we fully rebuilt Assistant's NLU models so it can now more accurately understand context while also improving its "reference resolution" – meaning it knows exactly what you're trying to do with a command. This upgrade uses machine learning technology powered by [state-of-the-art BERT](#), a technology we invented in 2018 and first brought to [Search](#) that makes it possible to process words in relation to all the other words in a sentence, rather than one-by-one in order. Because of these improvements, Assistant can now respond nearly 100 percent accurately to alarms and timer tasks. And over time, we'll bring this capability to other use cases, so Assistant can learn to better understand you.

²¹ <https://blog.google/products/assistant/loud-and-clear-ai-improving-assistant-conversations/>

99. Each of the Accused Google Assistant Products and Services comprises an event manager configured to coordinate interaction between the parser and the agent architecture.

100. For example, Google describes Google Assistant as including software that coordinates interactions between the components of the system.²²



1. A user triggers Assistant and makes a voice request for a specific app.
2. Assistant matches the request to a pre-trained model (BII), and extracts any parameters supported by the BII.
3. In this example, Assistant matches the query to the `GET_CHARGING_STATION` BII, extracts the location parameter "SFO", and translates the location to its geo coordinates.
4. The app is triggered via its fulfillment definition for this BII.
5. The app processes the fulfillment, displaying charging station options in the driver's infotainment system.

101. Each of the Accused Google Assistant Products and Services comprises an update manager that enables the user to purchase one or more domain agents from a third party on a one-time or subscription basis.

102. For example, based on public reporting, Google Assistant has allowed app makers to "sell subscriptions directly to users" since October 3, 2018.²³

²² <https://developer.android.com/guide/app-actions/cars>

²³ <https://venturebeat.com/ai/google-assistant-developers-can-now-sell-subscriptions/>










Google Assistant developers can now sell subscriptions

Starting today, developers creating voice apps for Google Assistant can make more visual experiences and sell subscriptions directly to users during conversations with the Assistant on Smart Displays, smartphones, and Home speakers.

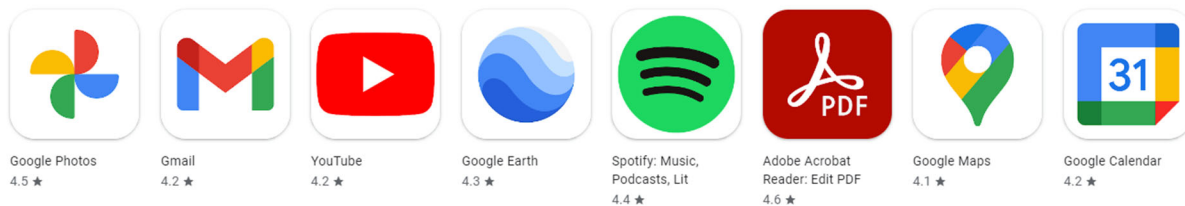
Google provides applications, including those with App Actions that permit subscription purchases through the Google Play store.²⁴

Top charts

Top free Top grossing Top paid

1	 Temu: Shop Like a Billionaire Shopping 4.7 ★	4	 WhatsApp Messenger Communication 4.3 ★	7	 Local News: Breaking & Latest News & Magazines 4.5 ★
2	 SHEIN-Shopping Online Shopping 4.7 ★	5	 Instagram Social 3.9 ★	8	 Snapchat Communication 4.2 ★
3	 TikTok Social 4.4 ★	6	 Cash App Finance 4.6 ★	9	 Messenger Communication 4.1 ★

Recommended for you



103. Google/Alphabet has long known about the '738 Patent.

104. On information and belief, Google/Alphabet actively monitors patent activity through information that is available to the public from the United States Patent and Trademark

²⁴ https://play.google.com/store/apps?hl=en_US&gl=US&pli=1

Office and from commercial and foreign government databases (including commercial databases operated by Google/Alphabet). For example, on or about October 6, 2014, the U.S. Patent Office identified the '209 Patent, to which the '738 Patent claims priority, to Google as prior art to Google's own United States patent application no. 13/888,770. On information and belief, Google/Alphabet was thereafter aware of the related '738 Patent.

105. Google/Alphabet knew or should have known that Google/Alphabet's actions infringe one or more of the claims of the '738 Patent because Google/Alphabet has the technical expertise to understand the scope and content of the '738 Patent, because Google/Alphabet is a major provider of voice recognition products and services, and because Google/Alphabet knows the design, function, and operation of the Accused Google Assistant Products and Services, as well as the nature and extent of their use by others. At a minimum, Google/Assistant has knowledge of the '738 Patent at least as of the filing of this Complaint.

106. Further, on information and belief, Google/Alphabet has actively induced and/or contributed to infringement of at least Claim 1 of the '738 Patent in violation of at least 35 U.S.C. § 271(b), (c), and (f).

107. Users of the Accused Google Assistant Products and Services directly infringe at least Claim 1 of the '738 Patent when they use the Accused Google Assistant Products and Services in the ordinary, customary, and intended way.

108. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) include, without limitation and with specific intent to encourage infringement, knowingly inducing businesses and consumers to use the Accused Google Assistant Products and Services within the United States in the ordinary, customary, and intended way by, directly or through intermediaries, supplying the Accused Google Assistant Products and Services to

businesses and consumers within the United States, and instructing and encouraging such businesses and consumers to use the Accused Google Assistant Products and Services in the ordinary, customary, and intended way, which Google/Alphabet knew infringes at least Claim 1 of the '738 Patent, or, alternatively, was willfully blind to the infringement.

109. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) further include, without limitation and with specific intent to encourage the infringement, knowingly inducing Google/Alphabet's customers to commit acts of infringement with respect to the Accused Google Assistant Products and Services within the United States, by, directly or through intermediaries, instructing and encouraging such customers to import, make, use, sell, offer to sell, or otherwise commit acts of infringement with respect to the Accused Google Assistant Products and Services in the United States, which Google/Alphabet knew infringes at least Claim 1 of the '738 Patent, or, alternatively, was willfully blind to the infringement.

110. On information and belief, in violation of 35 U.S.C. § 271(c), Google/Alphabet's contributory infringement further includes offering to sell or selling within the United States, or importing into the United States, components of the patented invention of and/or a material or apparatus for use in practicing at least Claim 1 of the '738 Patent, constituting a material part of the invention. On information and belief, Google/Alphabet knows and has known the same to be especially made or especially adapted for use in an infringement of the '738 Patent, and such components are not a staple article or commodity of commerce suitable for substantial noninfringing use.

111. On information and belief, in violation of 35 U.S.C. § 271(f)(1), Google/Alphabet's infringement further includes without authority supplying or causing to be supplied in or from the United States all or a substantial portion of the components of the patented invention of at least

Claim 1 of the '738 Patent, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States.

112. On information and belief, in violation of 35 U.S.C. § 271(f)(2), Google/Alphabet's infringement further includes without authority supplying or causing to be supplied in or from the United States components of the patented invention of at least Claim 1 of the '738 Patent that are especially made or especially adapted for use in the invention and not staple articles or commodities of commerce suitable for substantial noninfringing use, where such components are uncombined in whole or in part, knowing that such components are so made or adapted and intending that such components will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States.

113. Google/Alphabet is not licensed or otherwise authorized to practice the claims of the '738 Patent.

114. Thus, by its acts, Google/Alphabet has injured Dialect and is liable to Dialect for directly and/or indirectly infringing one or more claims of the '738 Patent, whether literally or under the doctrine of equivalents, including without limitation Claim 1.

115. As a result of Google/Alphabet's infringement of the '738 Patent, Dialect has suffered monetary damages, and seeks recovery, in an amount to be proven at trial, adequate to compensate for Google/Alphabet's infringement, but in no event less than a reasonable royalty with interest and costs.

116. On information and belief, in addition to Google/Alphabet's knowledge of the '738 Patent as set forth above both prior to and as a result of the filing of this Complaint, Google/Alphabet has had, and continues to have, the specific intent to infringe, through its

deliberate and intentional infringement or, alternatively, through its willfully blind disregard of the '738 Patent by knowing there was a high probability of infringement but taking deliberate actions to avoid confirming that infringement. The filing of this action has also made Google/Alphabet aware of the unjustifiably high risk that its actions constituted and continue to constitute infringement of the '738 Patent. On information and belief, discovery will reveal additional facts and circumstances from which Google/Alphabet's knowledge and intent to infringe (or willful indifference), both before and after the filing of this action, may be inferred.

117. Accordingly, Google/Alphabet's infringement of the '738 Patent has also been and continues to be deliberate, intentional, and willful, and this is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees and costs pursuant to 35 U.S.C. §§ 284 and 285.

118. Google/Alphabet's infringement of Dialect's rights under the '738 Patent will continue to damage Dialect, causing irreparable harm for which there is no adequate remedy at law, unless enjoined by this Court.

THIRD COUNT
(Infringement of U.S Patent No. 7,640,160)

119. Dialect incorporates by reference the allegations set forth in Paragraphs 1–118 as though fully set forth herein.

120. The claims of the '160 Patent are valid and enforceable.

121. The claims of the '160 Patent are directed to patentable subject matter. Particularly, the '160 Patent is directed to a novel, tangible voice recognition system. The inventive, tangible claimed structures of the '160 Patent improve on the natural language processing of a natural language utterance by a user. The claimed inventions provide specific concrete solutions to the problem of speech recognition in existing systems.

122. In violation of 35 U.S.C. § 271(a) and without authority from Plaintiff, Google/Alphabet has directly infringed by making, using, offering for sale, selling, and/or importing into the state of Delaware, this judicial district, and elsewhere in the United States products and services that embody the invention disclosed and claimed in the '160 Patent, including at least the Accused Google Assistant Products and Services.

123. Each of the Accused Google Assistant Products and Services contains elements that are identical or equivalent to each claimed element of the patented invention pointed out by at least Claim 12 of the '160 Patent.

124. Each of the Accused Google Assistant Products and Services comprises a method for interpreting natural language utterances using knowledge-enhanced speech recognition engine, wherein the knowledge-enhanced speech recognition engine is configured to determine an intent and correct false recognitions of the natural language utterances.

125. For example, Google describes Google Assistant as responding to a user generated natural language speech utterance.²⁵

²⁵ <https://support.google.com/assistant/answer/7172842?hl=en>

What you can ask Google Assistant

You can ask Google Assistant for info and for help with everyday tasks.

Important: Some queries won't work on all devices and in all languages.

For ideas about what Google Assistant can help with, ask "What can you do?"

What Google Assistant can do

Get local info

- **Weather:** What's the weather today?
- **Food:** Find pizza restaurants nearby.
- **Business hours:** Is Walgreens still open?
- **Navigation:** Navigate home.

Plan your day

- **Traffic:** How's the traffic to work?
- **Reminders:** Remind me to do laundry this evening. Remind me to call Mom every Sunday.
- **Calendar events:** When's my first meeting today? Add a meeting to my calendar.
- **Flights:** Is United flight 1463 on time?

Ask Google

- **Game updates:** Who won the Warriors game?
- **Calculations:** What's 20% of 80?
- **Dictionary:** What does "gregarious" mean?
- **Translations:** How do I say "Nice to meet you" in French?
- **Finance:** How's the S&P 500 doing?
- **Unit conversions:** How many kilometers in a mile?
- **Search:** Search for summer vacation ideas.
- **Image search:** Find pictures of kittens.
- **Web answer:** How do you remove wine stains from a rug?

Google further describes Google Assistant as capable of determining the best interpretation of an ambiguous query.²⁶

²⁶ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

To make it a little more complicated: If I were to ask something a bit more ambiguous, like, “Hey Google, what is the most popular dog?” – how would it know if I meant dog breed, dog name or the most popular famous dog?

In the first example, Assistant has to understand that you’re looking for a location (“where is”) and what you’re looking for (“a dog park”), so it makes sense to use Maps to help. In this, Assistant would recognize it’s a more open-ended question and call upon Search instead. What this really comes down to is identifying the best interpretation. One thing that is helpful is that Assistant can rank how satisfied previous users were with similar responses to similar questions – that can help it decide how certain it is of its interpretation. Ultimately, that question would go to Search, and the results would be proposed to you with whatever formatting is best for your device.

It’s also worth noting that there’s a group within the Assistant team that works on developing its personality, including by writing answers to common get-to-know-you questions like the one you posed about Assistant’s favorite food.

126. Each of the Accused Google Assistant Products and Services comprises receiving a transcription of a natural language utterance at a computer comprising the knowledge-enhanced speech recognition engine.

127. For example, Google describes Google Assistant as processing “audio of someone speaking” and “turn[ing] it into text.”²⁷

For Assistant, a deep neural network can receive an input, like the audio of someone speaking, and process that information across a stack of layers to turn it into text. This is what we call “speech recognition.” Then, the text is processed by another stack of layers to parse it into pieces of information that help the Assistant understand what you need and help you by displaying a result or taking an action on your behalf. This is what we call “natural language processing.”

128. Each of the Accused Google Assistant Products and Services comprises identifying one or more contexts that completely or partially match one or more text combinations contained in the transcription, wherein identifying the matching contexts includes comparing the text

²⁷ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

combinations against the grammar expression entries in the context description grammar and against one or more expected contexts stored in a context stack.

129. For example, Google describes Google Assistant as “trying to understand” a user’s intent by parsing “the text of your question” to identify the semantics and by sorting “possible answers based on things like how sure it is that it understood you correctly.”²⁸

Got it. Let’s say I ask Assistant something pretty straightforward, like, “Hey Google, where’s the closest dog park?” – how would Assistant understand what I’m saying and respond to my query?

The first step is for Assistant to process that “Hey Google” and realize, “Ah, it looks like this person is now speaking to me and wants something from me.”

Assistant picks up the rest of the audio, processes the question and gets text out of it. As it does that, it tries to understand what your sentence is about. What type of intention do you have?

To determine this, Assistant will parse the text of your question with another neural network that tries to identify the semantics, i.e. the meaning, of your question.

In this case, it will figure out that it’s a question it needs to search for – it’s not you asking to turn on your lights or anything like that. And since this is a location-based question, if your settings allow it, Assistant can send the geographic data of your device to Google Maps to return the results of which dog park is near you.

Then Assistant will sort its possible answers based on things like how sure it is that it understood you correctly and how relevant its various potential answers are. It will decide on the best answer, then provide it in the appropriate format for your device. It might be just a *speaker*, in which case it can give you spoken information. If you have a display in front of you, it could show you a map with walking directions.

Google further describes that types of information Google Assistant uses in identifying possible interpretations of a user’s text.²⁹

²⁸ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

²⁹ <https://developers.google.com/assistant/howassistantworks/responses>

If you interact with Assistant by voice, our speech recognition technology converts your request to text. Next, Assistant analyzes the text, in combination with useful information such as recent requests or the type of device you are using, to identify possible interpretations.

For example, if you say "Hey Google, stop," you might want to stop one of two timers that are running, music that's playing, or a routine that's running. You might also want to see search results for "Stop," or something else entirely.

To weigh the options, Assistant compiles a list of the different interpretations of your request and how it would respond to each one. The next step is to rank these options to find the best way to fulfill your request.

Ranking the available responses

Many signals help Assistant rank the available responses, including the following main factors:

- How sure Assistant is that it understood what you asked.
- Whether a response is actually available for a particular interpretation of your request.
- How satisfied previous users were with a particular response to similar requests.
- How recently the response was created, to help you get a variety of fresh, high-quality responses.
- How well a response works on the device that you are using. For example, responses that are optimized for devices with screens are likely to be ranked lower on speakers. On a partner device where Assistant is built-in, if you ask for something specific to that device, such as changing the volume or playing a movie, the device manufacturer may handle some or all of the response, according to what the partner decides is the best user experience.
- What else you asked for recently. For example, if you say, "Hey Google, start a five minute timer," and then shortly after say, "Hey Google, stop," Assistant may use your earlier request to understand what you mean.
- What you are currently doing on your device, such as which app you have open when you ask Assistant for help, or what Assistant is already helping you with. For example, if you are listening to music and you say "Hey Google, skip," Assistant jumps to the next song. Similarly, if you are part of the way through making a restaurant reservation using Assistant, it prioritizes completing the reservation above other possible responses.
- In limited circumstances, some high-quality responses may be manually curated to rank higher, for the purpose of improving the user experience. For example, to help users get timely information about COVID-19 and mitigate misinformation that could risk public safety, we may curate information from authoritative sources like the World Health Organization and governmental health authorities.

Google describes the Assistant's NLU models as understanding context, "meaning it knows exactly what you're trying to do with a command."³⁰

³⁰ <https://blog.google/products/assistant/loud-and-clear-ai-improving-assistant-conversations/>

A good conversation is all about context

Assistant's timers are a popular tool, and plenty of us set more than one of them at the same time. Maybe you've got a 10-minute timer for dinner going at the same time as another to remind the kids to start their homework in 20 minutes. You might fumble and stop mid sentence to correct how long the timer should be set for, or maybe you don't use the exact same phrase to cancel it as you did to create it. Like in any conversation, context matters and Assistant needs to be flexible enough to understand what you're referring to when you ask for help.

To help with these kinds of conversational complexities, we fully rebuilt Assistant's NLU models so it can now more accurately understand context while also improving its "reference resolution" — meaning it knows exactly what you're trying to do with a command. This upgrade uses machine learning technology powered by [state-of-the-art BERT](#), a technology we invented in 2018 and first brought to [Search](#) that makes it possible to process words in relation to all the other words in a sentence, rather than one-by-one in order. Because of these improvements, Assistant can now respond nearly 100 percent accurately to alarms and timer tasks. And over time, we'll bring this capability to other use cases, so Assistant can learn to better understand you.

130. Each of the Accused Google Assistant Products and Services comprises scoring each of the identified matching contexts.

131. For example, Google describes Google Assistant as ranking different interpretations of the user's request.³¹

³¹ ³¹ <https://developers.google.com/assistant/howassistantworks/responses>

Ranking the available responses

Many signals help Assistant rank the available responses, including the following main factors:

- How sure Assistant is that it understood what you asked.
- Whether a response is actually available for a particular interpretation of your request.
- How satisfied previous users were with a particular response to similar requests.
- How recently the response was created, to help you get a variety of fresh, high-quality responses.
- How well a response works on the device that you are using. For example, responses that are optimized for devices with screens are likely to be ranked lower on speakers. On a partner device where Assistant is built-in, if you ask for something specific to that device, such as changing the volume or playing a movie, the device manufacturer may handle some or all of the response, according to what the partner decides is the best user experience.
- What else you asked for recently. For example, if you say, "Hey Google, start a five minute timer," and then shortly after say, "Hey Google, stop," Assistant may use your earlier request to understand what you mean.
- What you are currently doing on your device, such as which app you have open when you ask Assistant for help, or what Assistant is already helping you with. For example, if you are listening to music and you say "Hey Google, skip," Assistant jumps to the next song. Similarly, if you are part of the way through making a restaurant reservation using Assistant, it prioritizes completing the reservation above other possible responses.
- In limited circumstances, some high-quality responses may be manually curated to rank higher, for the purpose of improving the user experience. For example, to help users get timely information about COVID-19 and mitigate misinformation that could risk public safety, we may curate information from authoritative sources like the World Health Organization and governmental health authorities.

132. Each of the Accused Google Assistant Products and Services comprises selecting the matching context having a highest score to determine a most likely context for the utterance.

133. For example, Google describes Google Assistant as selecting, for example, Search based on the rankings of available responses.³²

³² <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

To make it a little more complicated: If I were to ask something a bit more ambiguous, like, “Hey Google, what is the most popular dog?” – how would it know if I meant dog breed, dog name or the most popular famous dog?

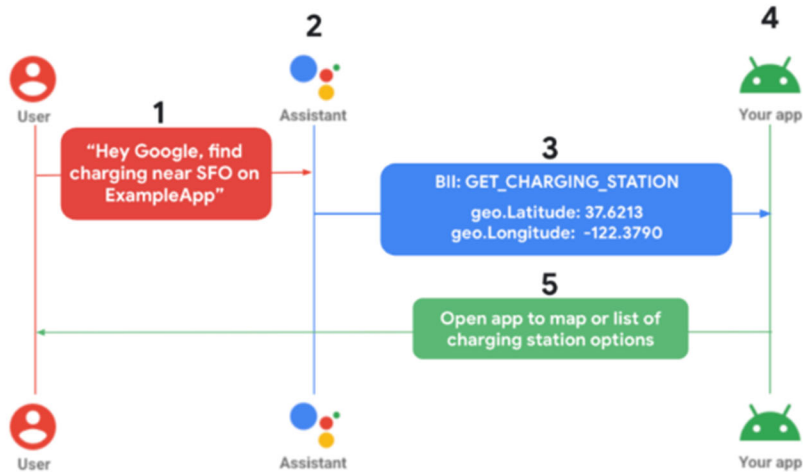
In the first example, Assistant has to understand that you’re looking for a location (“where is”) and what you’re looking for (“a dog park”), so it makes sense to use Maps to help. In this, Assistant would recognize it’s a more open-ended question and call upon Search instead. What this really comes down to is identifying the best interpretation. One thing that is helpful is that Assistant can rank how satisfied previous users were with similar responses to similar questions – that can help it decide how certain it is of its interpretation. Ultimately, that question would go to Search, and the results would be proposed to you with whatever formatting is best for your device.

It’s also worth noting that there’s a group within the Assistant team that works on developing its personality, including by writing answers to common get-to-know-you questions like the one you posed about Assistant’s favorite food.

134. Each of the Accused Google Assistant Products and Services comprises communicating a request to a domain agent configured to process requests in the most likely context for the utterance, the request formulated using at least one grammar expression entry in the context description grammar.

135. For example, Google describes Google Assistant as including software that coordinates interactions between components of the system.³³

³³ <https://developer.android.com/guide/app-actions/cars>



1. A user triggers Assistant and makes a voice request for a specific app.
2. Assistant matches the request to a pre-trained model (BII), and extracts any parameters supported by the BII.
3. In this example, Assistant matches the query to the `GET_CHARGING_STATION` BII, extracts the location parameter "SFO", and translates the location to its geo coordinates.
4. The app is triggered via its fulfillment definition for this BII.
5. The app processes the fulfillment, displaying charging station options in the driver's infotainment system.

136. Google/Alphabet has long known about the '160 Patent.

137. On information and belief, Google/Alphabet actively monitors patent activity through information that is available to the public from the United States Patent and Trademark Office and from commercial and foreign government databases (including commercial databases operated by Google/Alphabet). For example, on or about October 6, 2014, the U.S. Patent Office identified the '160 Patent to Google as prior art to Google's own United States patent application no. 13/888,770. On or about June 15, 2018, the U.S. Patent Office identified the '160 Patent to Google/Alphabet as prior art to Google/Alphabet's own United States patent application no. 15/597,249. On or about January 21, 2022, the U.S. Patent Office identified the '160 Patent to Google/Alphabet as prior art to Google/Alphabet's own United States patent application no. 16/609,461.

138. Google/Alphabet knew or should have known that Google/Alphabet's actions infringe one or more of the claims of the '160 Patent because Google/Alphabet has the technical expertise to understand the scope and content of the '160 Patent, because Google/Alphabet is a major provider of voice recognition products and services, and because Google/Alphabet knows the design, function, and operation of the Accused Google Assistant Products and Services, as well as the nature and extent of their use by others. At a minimum, Google/Assistant has knowledge of the '160 Patent at least as of the filing of this Complaint.

139. Further, on information and belief, Google/Alphabet has actively induced and/or contributed to infringement of at least Claim 12 of the '160 Patent in violation of at least 35 U.S.C. § 271(b) and (c).

140. Users of the Accused Google Assistant Products and Services directly infringe at least Claim 12 of the '160 Patent when they use the Accused Google Assistant Products and Services in the ordinary, customary, and intended way.

141. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) include, without limitation and with specific intent to encourage infringement, knowingly inducing businesses and consumers to use the Accused Google Assistant Products and Services within the United States in the ordinary, customary, and intended way by, directly or through intermediaries, supplying the Accused Google Assistant Products and Services to businesses and consumers within the United States, and instructing and encouraging such businesses and consumers to use the Accused Google Assistant Products and Services in the ordinary, customary, and intended way, which Google/Alphabet knew infringes at least Claim 12 of the '160 Patent, or, alternatively, was willfully blind to the infringement.

142. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) further include, without limitation and with specific intent to encourage the infringement, knowingly inducing Google/Alphabet's customers to commit acts of infringement with respect to the Accused Google Assistant Products and Services within the United States, by, directly or through intermediaries, instructing and encouraging such customers to import, make, use, sell, offer to sell, or otherwise commit acts of infringement with respect to the Accused Google Assistant Products and Services in the United States, which Google/Alphabet knew infringes at least Claim 12 of the '160 Patent, or, alternatively, was willfully blind to the infringement.

143. On information and belief, in violation of 35 U.S.C. § 271(c), Google/Alphabet's contributory infringement further includes offering to sell or selling within the United States, or importing into the United States, components of the patented invention of and/or a material or apparatus for use in practicing at least Claim 12 of the '160 Patent, constituting a material part of the invention. On information and belief, Google/Alphabet knows and has known the same to be especially made or especially adapted for use in an infringement of the '160 Patent, and such components are not a staple article or commodity of commerce suitable for substantial noninfringing use.

144. Google/Alphabet is not licensed or otherwise authorized to practice the claims of the '160 Patent.

145. Thus, by its acts, Google/Alphabet has injured Dialect and is liable to Dialect for directly and/or indirectly infringing one or more claims of the '160 Patent, whether literally or under the doctrine of equivalents, including without limitation Claim 12.

146. As a result of Google/Alphabet's infringement of the '160 Patent, Dialect has suffered monetary damages, and seeks recovery, in an amount to be proven at trial, adequate to

compensate for Google/Alphabet's infringement, but in no event less than a reasonable royalty with interest and costs.

147. On information and belief, in addition to Google/Alphabet's knowledge of the '160 Patent as set forth above both prior to and as a result of the filing of this Complaint, Google/Alphabet has had, and continues to have, the specific intent to infringe, through its deliberate and intentional infringement or, alternatively, through its willfully blind disregard of the '160 Patent by knowing there was a high probability of infringement but taking deliberate actions to avoid confirming that infringement. The filing of this action has also made Google/Alphabet aware of the unjustifiably high risk that its actions constituted and continue to constitute infringement of the '160 Patent. On information and belief, discovery will reveal additional facts and circumstances from which Google/Alphabet's knowledge and intent to infringe (or willful indifference), both before and after the filing of this action, may be inferred.

148. Accordingly, Google/Alphabet's infringement of the '160 Patent has also been and continues to be deliberate, intentional, and willful, and this is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees and costs pursuant to 35 U.S.C. §§ 284 and 285.

149. Google/Alphabet's infringement of Dialect's rights under the '160 Patent will continue to damage Dialect, causing irreparable harm for which there is no adequate remedy at law, unless enjoined by this Court.

FOURTH COUNT
(Infringement of U.S Patent No. 7,693,720)

150. Dialect incorporates by reference the allegations set forth in Paragraphs 1–149 as though fully set forth herein.

151. The claims of the '720 Patent are valid and enforceable.

152. The claims of the '720 Patent are directed to patentable subject matter. Particularly, the '720 Patent is directed to a novel, tangible voice recognition system. The inventive, tangible claimed structures of the '720 Patent improve on the natural language processing of a natural language utterance by a user. The claimed inventions provide specific concrete solutions to the problem of speech recognition in existing systems.

153. In violation of 35 U.S.C. § 271(a) and without authority from Plaintiff, Google/Alphabet has directly infringed by making, using, offering for sale, selling, and/or importing into the state of Delaware, this judicial district, and elsewhere in the United States products and services that embody the invention disclosed and claimed in the '720 Patent, including at least the Google Assistant Platform, operating via smartphones and tablets functioning in Google Assistant driving mode, or in combination with App Actions and Android software, or in combination with Android Auto software, or operating via automobile infotainment systems running Android Automotive OS software (collectively, the “Accused Automotive Products and Services”).

154. Each of the Accused Automotive Products and Services contains elements that are identical or equivalent to each claimed element of the patented invention pointed out by at least Claim 1 of the '720 Patent.

155. Each of the Accused Automotive Products and Services comprises a mobile system responsive to a user generated natural language speech utterance.

156. For example, Google describes how “Google Assistant enhances the Android for Cars experience with voicified apps.”³⁴

³⁴ <https://www.youtube.com/watch?v=MI40lmJmp7w>

Assistant and Android for Cars

- Overview Apps for Android for Cars
- Overview App Actions
- Enables voice control in an automotive context



Google further describes Google Assistant as responding to a user generated natural language speech utterance.³⁵

³⁵ <https://support.google.com/assistant/answer/7172842?hl=en>

What you can ask Google Assistant

You can ask Google Assistant for info and for help with everyday tasks.

Important: Some queries won't work on all devices and in all languages.

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- **Traffic:** How's the traffic to work?
- **Reminders:** Remind me to do laundry this evening. Remind me to call Mom every Sunday.
- **Calendar events:** When's my first meeting today? Add a meeting to my calendar.
- **Flights:** Is United flight 1463 on time?

Ask Google

- **Game updates:** Who won the Warriors game?
- **Calculations:** What's 20% of 80?
- **Dictionary:** What does "gregarious" mean?
- **Translations:** How do I say "Nice to meet you" in French?
- **Finance:** How's the S&P 500 doing?
- **Unit conversions:** How many kilometers in a mile?
- **Search:** Search for summer vacation ideas.
- **Image search:** Find pictures of kittens.
- **Web answer:** How do you remove wine stains from a rug?

Google further describes that Google Assistant App Actions are integrated with Android for Cars.³⁶

Integrate with Google Assistant using App Actions

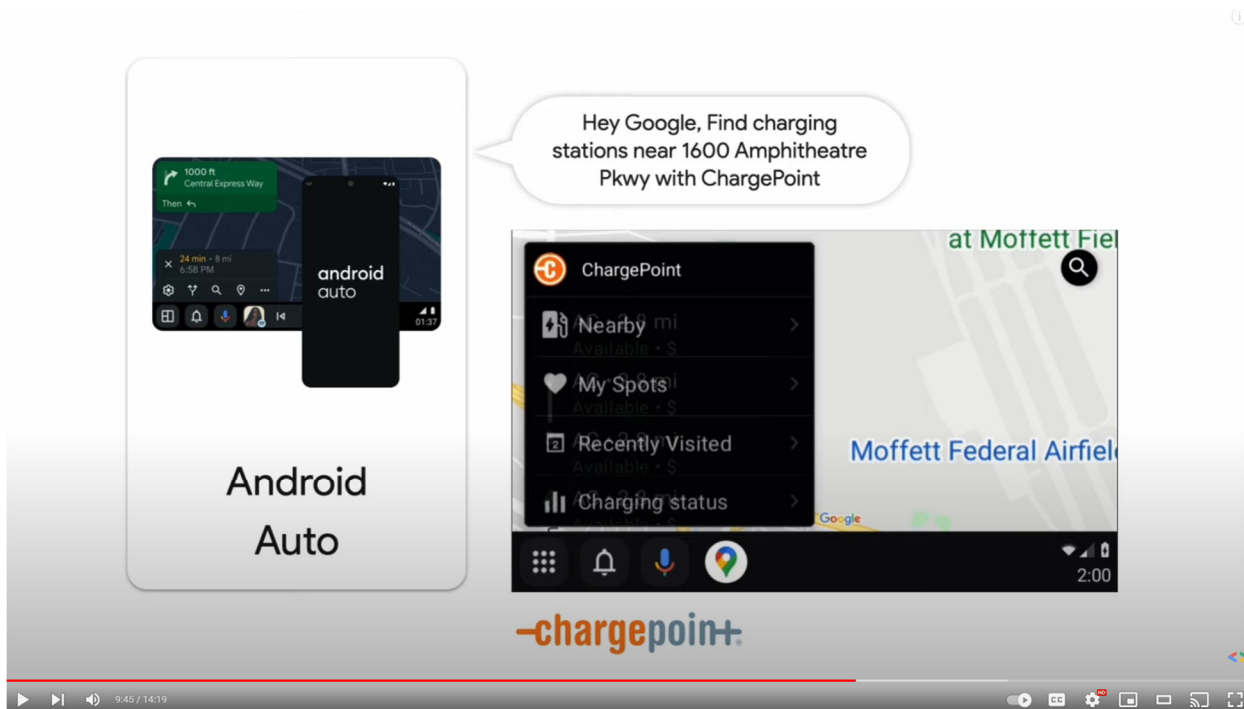
Voice-enable your POI app using Assistant to allow users to search for points of interest by asking things like, "Hey Google, find nearby charging stations on ExampleApp". For detailed instructions, see [App Actions for Cars](#).

157. Each of the Accused Automotive Products and Services comprises a speech unit connected to a computer device on a vehicle, wherein the speech unit receives a natural language

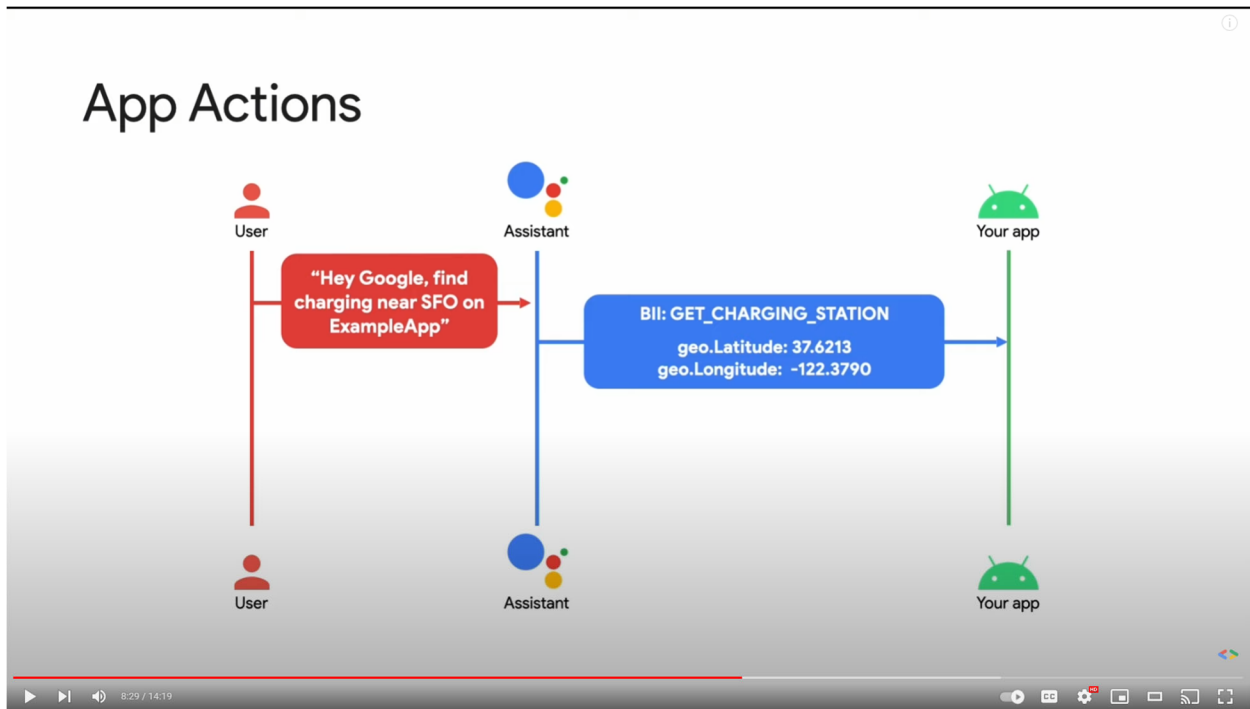
³⁶ <https://developer.android.com/training/cars/apps/poi>

speech utterance from a user and converts the received natural language speech utterance into an electronic signal.

158. For example, Google describes how Google Assistant with Android for Cars receives user requests and converts those into electronic signals.³⁷



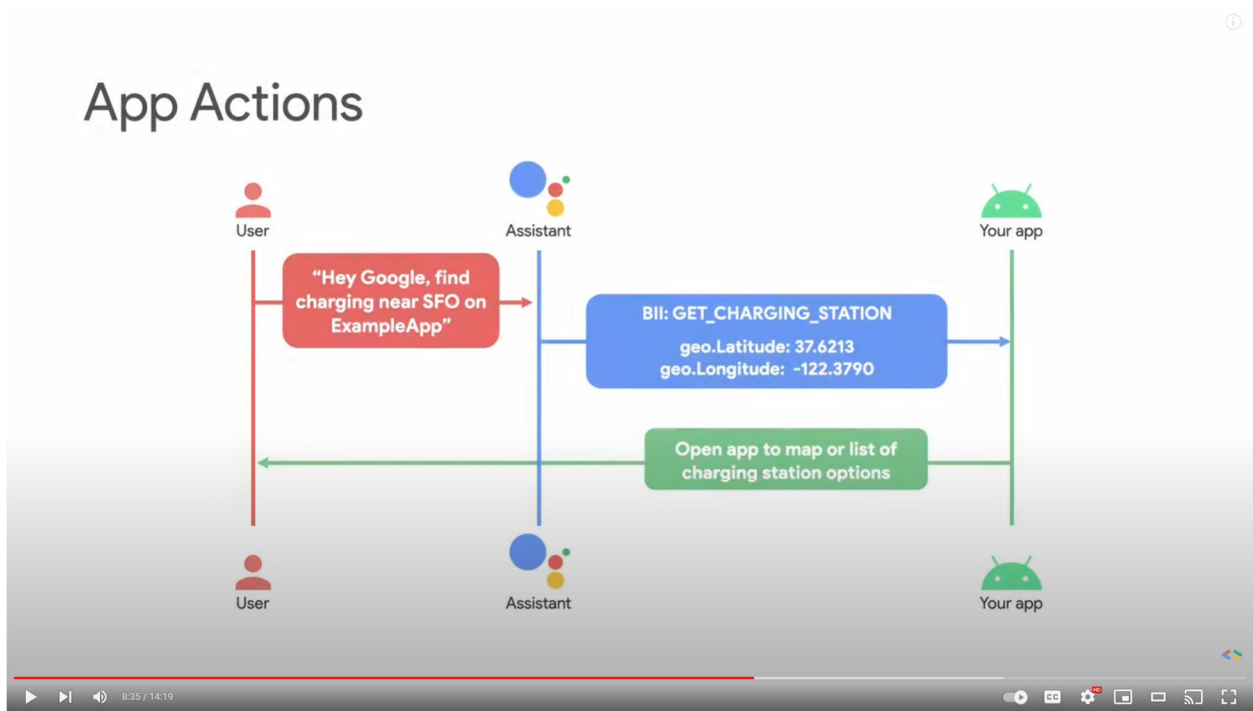
³⁷ <https://www.youtube.com/watch?v=MI40lmJmp7w>



159. Each of the Accused Automotive Products and Services comprises a natural language speech processing system connected to the computer device on the vehicle, wherein the natural language speech processing system receives, processes, and responds to the electronic signal using data received from a plurality of domain agents.

160. For example, Google describes how Google Assistant with Android for Cars processes the received request to determine the appropriate software module or modules for the request and communicates the parameters for that request to the appropriate module or modules, which then responds to the query.³⁸

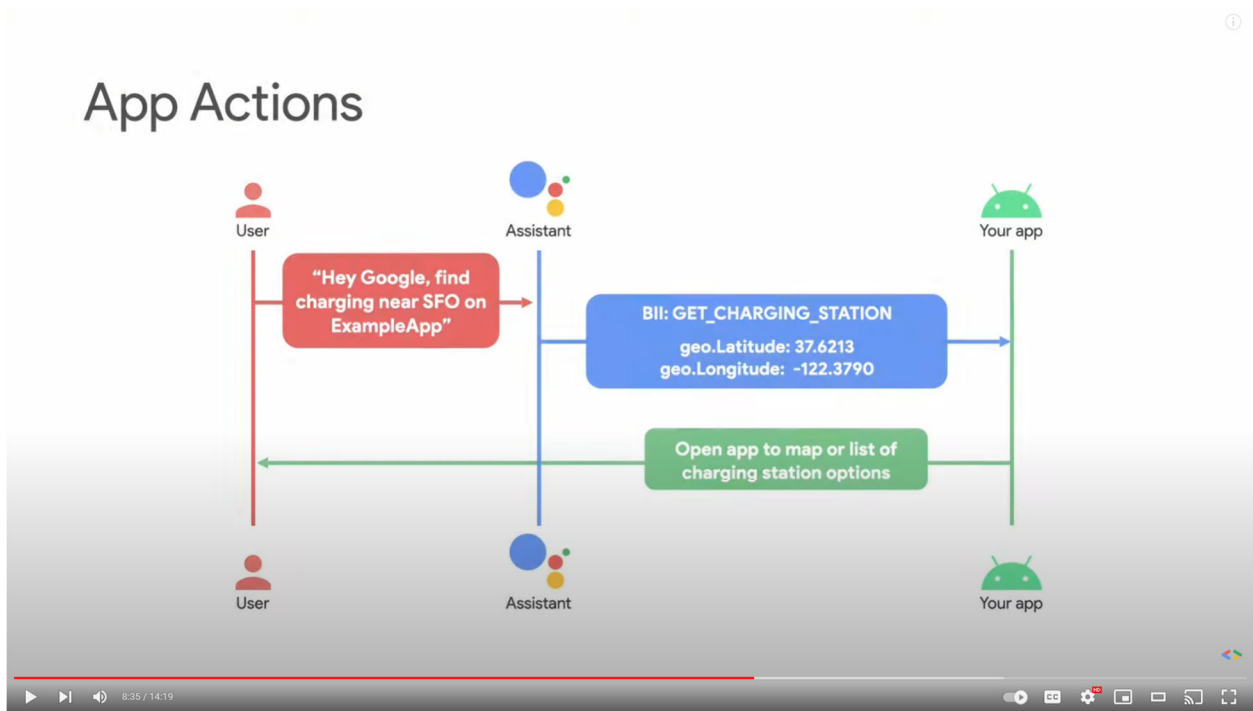
³⁸ <https://www.youtube.com/watch?v=MI40lmJmp7w>



161. Each of the Accused Automotive Products and Services comprises a speech recognition engine that recognizes at least one of words or phrases from the electronic signal using at least the data received from the plurality of domain agents, wherein the data used by the speech recognition engine includes a plurality of dictionary and phrase entries that are dynamically updated based on at least a history of a current dialog and one or more prior dialogs associated with the user.

162. For example, Google describes how Google Assistant with Android for Cars recognizes at least one of words or phrases from the electronic signal, for example SFO, using data received from the appropriate module or modules.³⁹

³⁹ <https://www.youtube.com/watch?v=MI40lmJmp7w>



Further, Google describes how Google Assistant uses “trainingPhrases[]” to match “interests to user input.”⁴⁰

`trainingPhrases[]`

`string`

Training phrases allow Google's NLU to automatically match intents with user input. The more unique phrases that are provided, the better chance this intent will be matched. The following is the format of training phrase part which are annotated. Note that `auto` field is optional and the default behavior when `auto` is not specified is equivalent to `auto=false`. (`<paramName> '<sample text>' auto=<true or false>`) `auto = true` means the part was auto annotated by NLU. `auto = false` means the part was annotated by the user. This is the default when `auto` is not specified. Example: "Book a flight from (`$source` 'San Francisco' `auto=false`) to (`$dest` 'Vancouver')"

Google further describes how Google Assistant uses previous interactions and the history of the current interaction in interpreting user intent.⁴¹

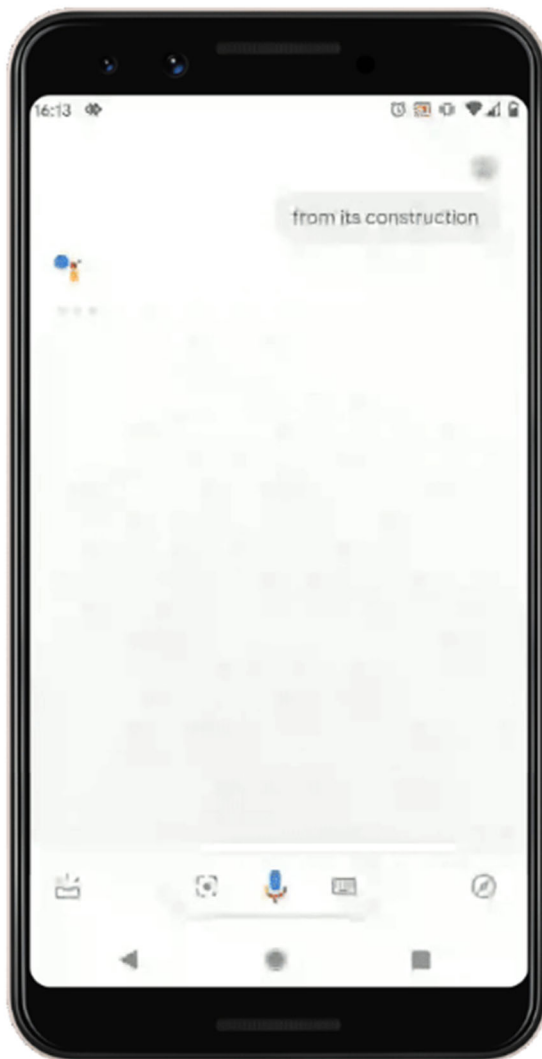
⁴⁰

<https://developers.google.com/assistant/actionssdk/reference/rest/Shared.Types/Intent#IntentParameter>

⁴¹ <https://blog.google/products/assistant/loud-and-clear-ai-improving-assistant-conversations/>

More natural conversations

We also applied BERT to further improve the quality of your conversations. Google Assistant uses your previous interactions and understands what's currently being displayed on your smartphone or smart display to respond to any follow-up questions, letting you have a more natural, back-and-forth conversation.

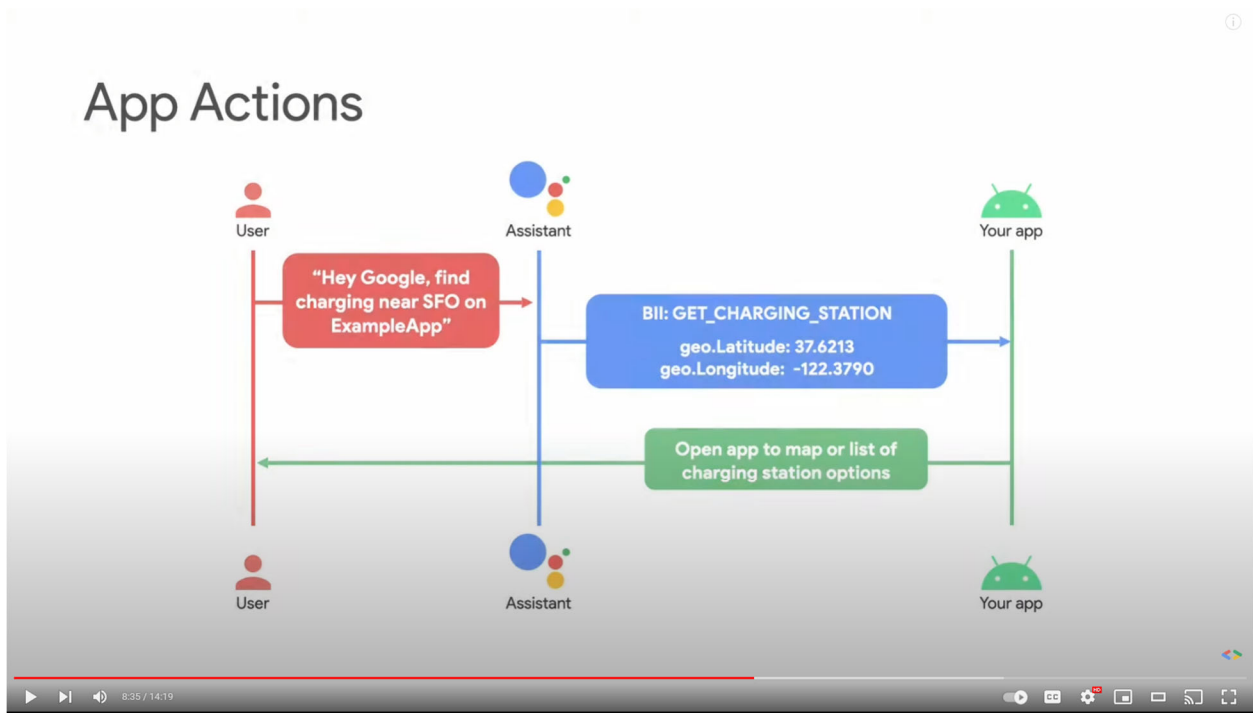


If you're having a conversation with your Assistant about Miami and you want more information, it will know that when you say "show me the nicest beaches" you mean beaches in Miami. Assistant can also understand questions that are referring to what you're looking at on your smartphone or tablet screen, like [who built the first one] or queries that look incomplete like [when] or [from its construction].

163. Each of the Accused Automotive Products and Services comprises a parser that interprets the recognized words or phrases, wherein the parser uses at least the data received from the plurality of domain agents to interpret the recognized words or phrases, wherein the parser interprets the recognized words or phrases by determining a context for the natural language speech utterance; selecting at least one of the plurality of domain agents based on the determined context; and transforming the recognized words or phrases into at least one of a question or a command, wherein the at least one question or command is formulated in a grammar that the selected domain agent uses to process the formulated question or command.

164. For example, Google describes how Google Assistant with Android for Cars interprets the user's words or phrases using data received from the appropriate module or modules. For example, it selects ExampleApp based on the user's request to "find charging near SFO on ExampleApp." It then transforms the request by providing the BII information based on the recognized word SFO into a command formulated in the structure required by ExampleApp.⁴²

⁴² <https://www.youtube.com/watch?v=MI40lmJmp7w>



Google further provides other examples in different situations, for example, requesting weather information.⁴³

For example, consider an easy user request like, "What's the forecast like today?" Other users might also ask, "What's the weather like right now?" or "What's the temperature like in San Francisco tomorrow?" Even with this simple question, you can see that conversational experiences are hard to implement, because interpreting and processing natural language requires a very robust language parser that's capable of understanding the nuances of language. Your code would have to handle all these different types of requests (and potentially many more) to carry out the same logic: looking up some forecast information for a time and location. For this reason, a traditional computer interface requires well-known, standard input requests to the detriment of the user experience, because it's easier to handle highly structured input.

However, when you build Conversational Actions, Assistant handles the natural language understanding (NLU) for you, so you can build open-ended, conversational interfaces easily. These interface tools let you understand the vast and varied nuances of human language and translate that to standard and structured meaning that your apps and services can understand. Let's take a look at how an Action might handle the previous examples for weather forecast requests.

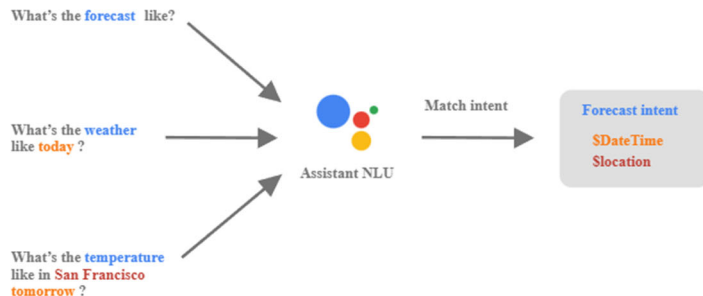


Figure 1. NLU intent matching

⁴³ <https://developers.google.com/assistant/conversational/overview>

Google states that its Assistant “gets text out” of the question and identifies “the semantics, i.e. the meaning, of your question.”⁴⁴

Got it. Let's say I ask Assistant something pretty straightforward, like, “Hey Google, where's the closest dog park?” – how would Assistant understand what I'm saying and respond to my query?

The first step is for Assistant to process that “Hey Google” and realize, “Ah, it looks like this person is now speaking to me and wants something from me.”

Assistant picks up the rest of the audio, processes the question and gets text out of it. As it does that, it tries to understand what your sentence is about. What type of intention do you have?

To determine this, Assistant will parse the text of your question with another neural network that tries to identify the semantics, i.e. the meaning, of your question.

Google describes the Assistant’s NLU models as understanding context, “meaning it knows exactly what you’re trying to do with a command.”⁴⁵

A good conversation is all about context

Assistant’s timers are a popular tool, and plenty of us set more than one of them at the same time. Maybe you’ve got a 10-minute timer for dinner going at the same time as another to remind the kids to start their homework in 20 minutes. You might fumble and stop mid sentence to correct how long the timer should be set for, or maybe you don’t use the exact same phrase to cancel it as you did to create it. Like in any conversation, context matters and Assistant needs to be flexible enough to understand what you’re referring to when you ask for help.

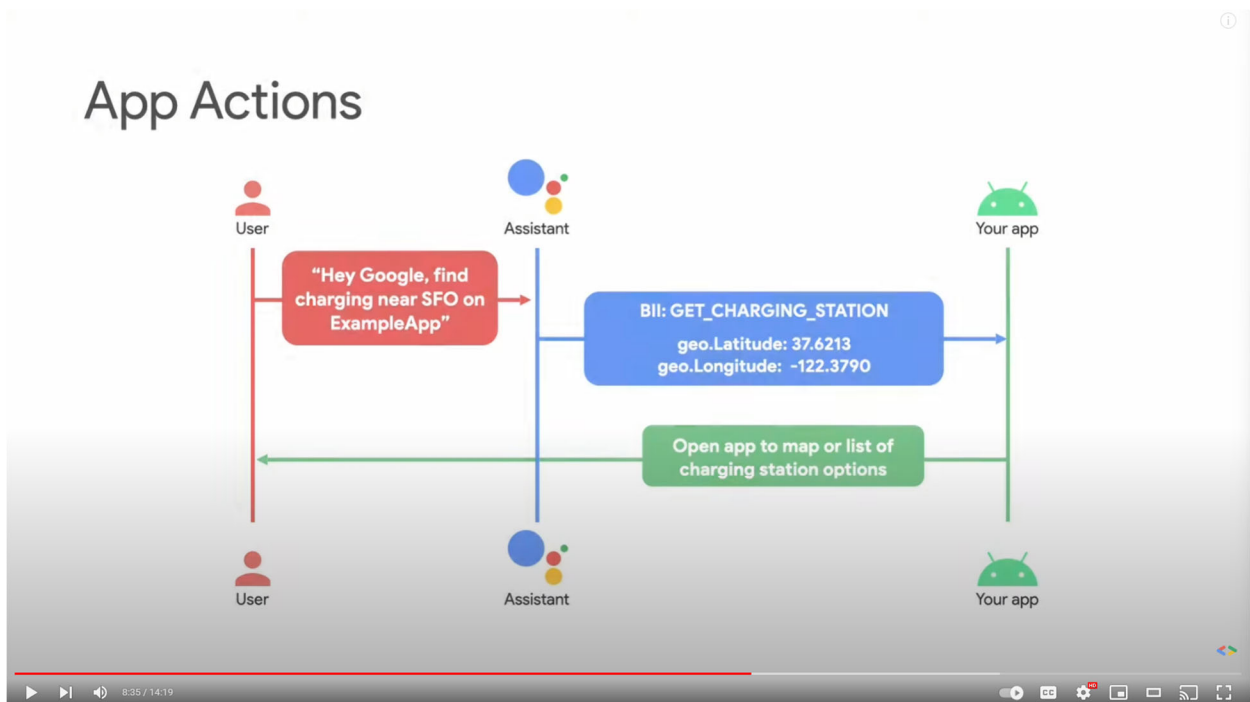
To help with these kinds of conversational complexities, we fully rebuilt Assistant’s NLU models so it can now more accurately understand context while also improving its “reference resolution” – meaning it knows exactly what you’re trying to do with a command. This upgrade uses machine learning technology powered by [state-of-the-art BERT](#), a technology we invented in 2018 and first brought to [Search](#) that makes it possible to process words in relation to all the other words in a sentence, rather than one-by-one in order. Because of these improvements, Assistant can now respond nearly 100 percent accurately to alarms and timer tasks. And over time, we’ll bring this capability to other use cases, so Assistant can learn to better understand you.

⁴⁴ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

⁴⁵ <https://blog.google/products/assistant/loud-and-clear-ai-improving-assistant-conversations/>

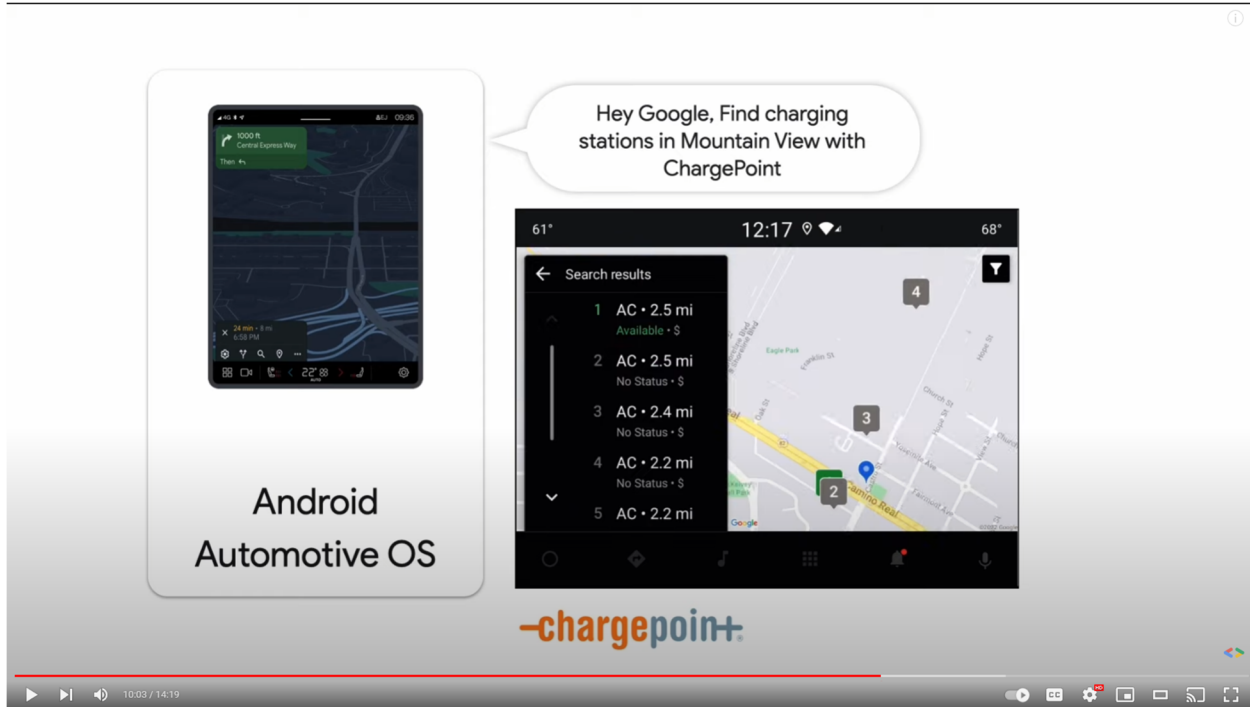
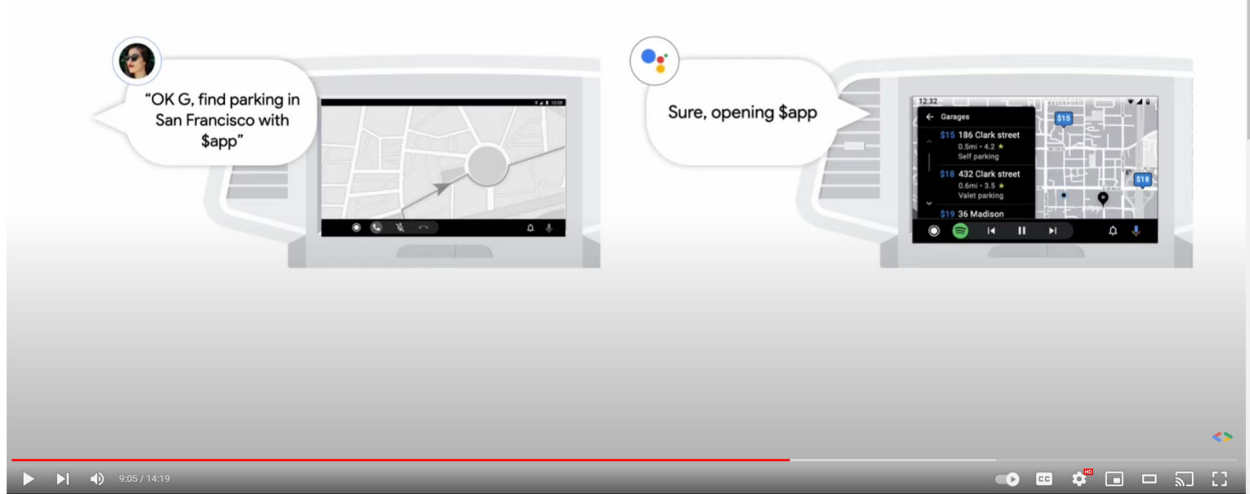
165. Each of the Accused Automotive Products and Services comprises an agent architecture that communicatively couples services of each of an agent manager, a system agent, the plurality of domain agents, and an agent library that includes one or more utilities that can be used by the system agent and the plurality of domain agents, wherein the selected domain agent uses the communicatively coupled services to create a response to the formulated question or command and format the response for presentation to the user.

166. For example, Google describes how Google Assistant with Android for Cars uses the Google Assistant infrastructure so that the ExampleApp can use the Google Assistant services to create a response to the user's command in a format for presentation to the user.⁴⁶



⁴⁶ <https://www.youtube.com/watch?v=MI40lmJmp7w>

Voice Support via App Actions



Further, Google describes how Google Assistant uses its software modules to provide services to formulate the response to the user in a format for presentation.⁴⁷

⁴⁷ <https://developers.google.com/assistant/conversational/actions>

Overview

A Conversational Action is a simple object that defines an entry point (referred to as invocation) into a conversation:

- An **invocation** defines how users tell Assistant they want to start a conversation with one of your Actions. An Action's invocation is defined by a single **intent** that gets matched when users request the Action.
- A **conversation** defines how users interact with an Action after it's invoked. You build conversations with **intents**, **types**, **scenes**, and **prompts**.
- In addition, your Actions can delegate extra work to **fulfillment**, which are web services that communicate with your Actions via webhooks. This lets you do data validation, call other web services, carry out business logic, and more.

You bundle one or many Actions together, based on the use cases that are important for your users, into a logical container called an Actions project. Your Actions project contains your entire invocation model (the collection of all your invocations), which lets users start at logical places in your conversation model (all the possible things users can say and all the possible ways you respond back to users).

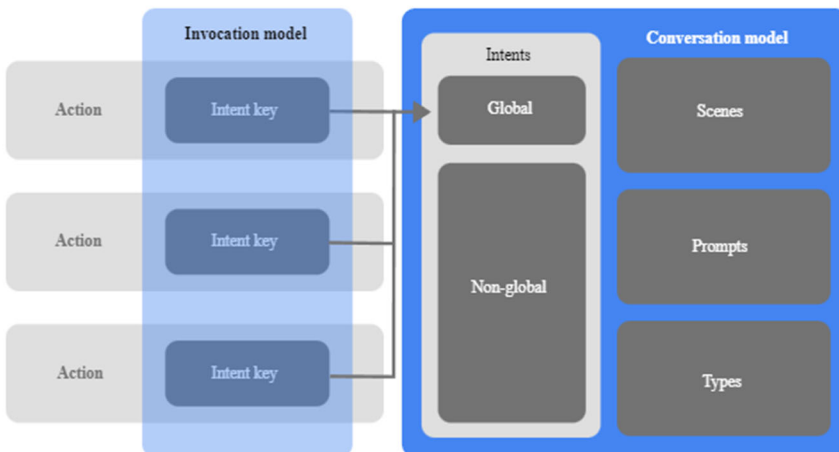


Figure 1. A collection of Actions that serve as entry points into a conversation model. Intents that are eligible for invocation are considered to be *global*.

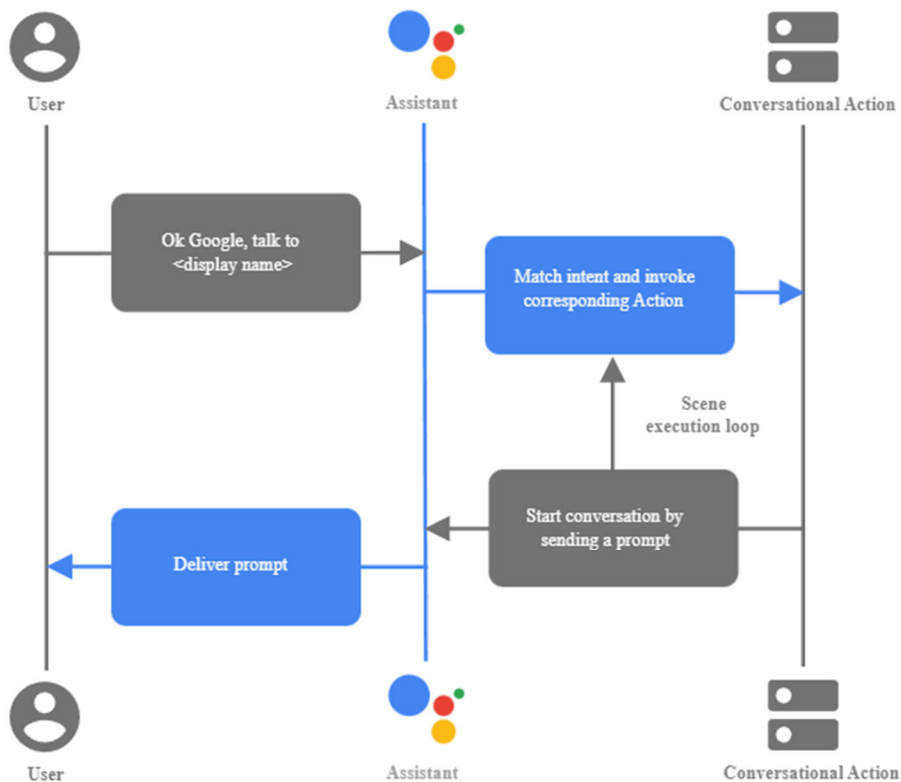


Figure 2. Example of main invocation

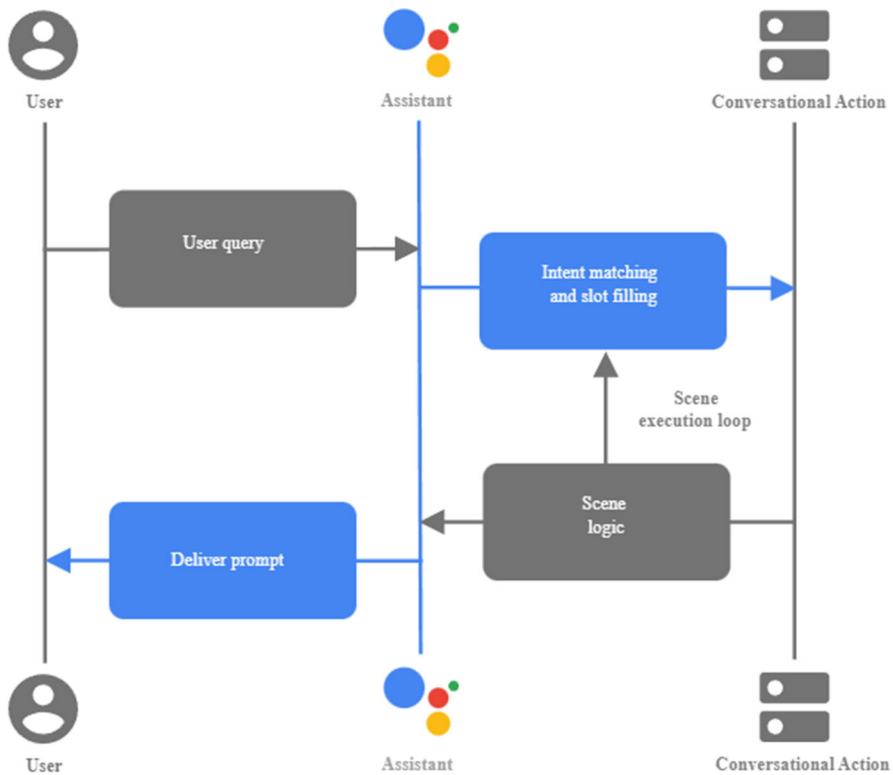


Figure 3. Example of a conversation

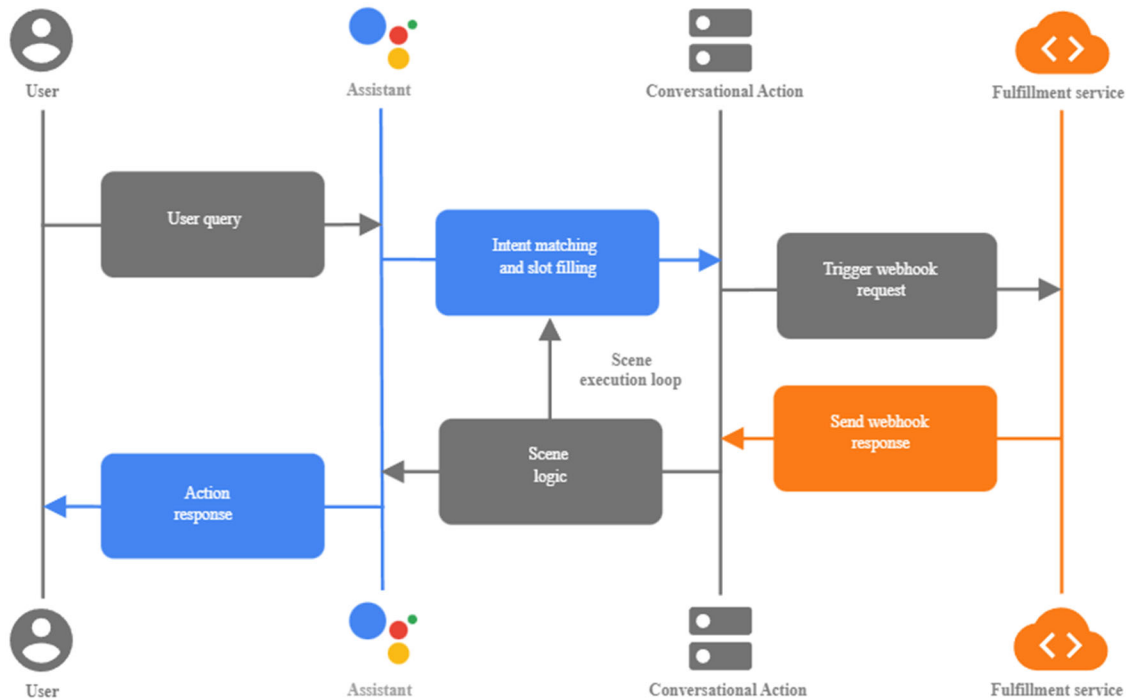


Figure 4. Example of a conversation

Figure 4 describes how you can use fulfillment to generate prompts, a common way to use fulfillment:

167. Google/Alphabet has long known about the '720 Patent.

168. On information and belief, Google/Alphabet actively monitors patent activity through information that is available to the public from the United States Patent and Trademark Office and from commercial and foreign government databases (including commercial databases operated by Google/Alphabet). For example, on or about February 2, 2012, the U.S. Patent Office identified the '720 Patent to Google as prior art to Google's own United States patent application no. 12/692,307. On September 7, 2014, Google disclosed the '720 Patent as prior art to its own patent application no. 14/048,199. On or about March 26, 2015, the U.S. Patent Office identified the '720 Patent to Google as prior art to Google's own United States patent application no. 12/914,965.

169. Google/Alphabet knew or should have known that Google/Alphabet's actions infringe one or more of the claims of the '720 Patent because Google/Alphabet has the technical

expertise to understand the scope and content of the '720 Patent, because Google/Alphabet is a major provider of voice recognition products and services, and because Google/Alphabet knows the design, function, and operation of the Accused Automotive Products and Services, as well as the nature and extent of their use by others. At a minimum, Google/Assistant has knowledge of the '720 Patent at least as of the filing of this Complaint.

170. Further, on information and belief, Google/Alphabet has actively induced and/or contributed to infringement of at least Claim 1 of the '720 Patent in violation of at least 35 U.S.C. § 271(b), (c), and (f).

171. Users of the Accused Automotive Products and Services directly infringe at least Claim 1 of the '720 Patent when they use the Accused Automotive Products and Services in the ordinary, customary, and intended way.

172. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) include, without limitation and with specific intent to encourage infringement, knowingly inducing businesses and consumers to use the Accused Automotive Products and Services within the United States in the ordinary, customary, and intended way by, directly or through intermediaries, supplying the Accused Automotive Products and Services to businesses and consumers within the United States, and instructing and encouraging such businesses and consumers to use the Accused Automotive Products and Services in the ordinary, customary, and intended way, which Google/Alphabet knew infringes at least Claim 1 of the '720 Patent, or, alternatively, was willfully blind to the infringement.

173. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) further include, without limitation and with specific intent to encourage the infringement, knowingly inducing Google/Alphabet's customers to commit acts of infringement

with respect to the Accused Automotive Products and Services within the United States, by, directly or through intermediaries, instructing and encouraging such customers to import, make, use, sell, offer to sell, or otherwise commit acts of infringement with respect to the Accused Automotive Products and Services in the United States, which Google/Alphabet knew infringes at least Claim 1 of the '720 Patent, or, alternatively, was willfully blind to the infringement.

174. On information and belief, in violation of 35 U.S.C. § 271(c), Google/Alphabet's contributory infringement further includes offering to sell or selling within the United States, or importing into the United States, components of the patented invention of and/or a material or apparatus for use in practicing at least Claim 1 of the '720 Patent, constituting a material part of the invention. On information and belief, Google/Alphabet knows and has known the same to be especially made or especially adapted for use in an infringement of the '720 Patent, and such components are not a staple article or commodity of commerce suitable for substantial noninfringing use.

175. On information and belief, in violation of 35 U.S.C. § 271(f)(1), Google/Alphabet's infringement further includes without authority supplying or causing to be supplied in or from the United States all or a substantial portion of the components of the patented invention of at least Claim 1 of the '720 Patent, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States.

176. On information and belief, in violation of 35 U.S.C. § 271(f)(2), Google/Alphabet's infringement further includes without authority supplying or causing to be supplied in or from the United States components of the patented invention of at least Claim 1 of the '720 Patent that are especially made or especially adapted for use in the invention and not staple articles or

commodities of commerce suitable for substantial noninfringing use, where such components are uncombined in whole or in part, knowing that such components are so made or adapted and intending that such components will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States.

177. Google/Alphabet is not licensed or otherwise authorized to practice the claims of the '720 Patent.

178. Thus, by its acts, Google/Alphabet has injured Dialect and is liable to Dialect for directly and/or indirectly infringing one or more claims of the '720 Patent, whether literally or under the doctrine of equivalents, including without limitation Claim 1.

179. As a result of Google/Alphabet's infringement of the '720 Patent, Dialect has suffered monetary damages, and seeks recovery, in an amount to be proven at trial, adequate to compensate for Google/Alphabet's infringement, but in no event less than a reasonable royalty with interest and costs.

180. On information and belief, in addition to Google/Alphabet's knowledge of the '720 Patent as set forth above both prior to and as a result of the filing of this Complaint, Google/Alphabet has had, and continues to have, the specific intent to infringe, through its deliberate and intentional infringement or, alternatively, through its willfully blind disregard of the '720 Patent by knowing there was a high probability of infringement but taking deliberate actions to avoid confirming that infringement. The filing of this action has also made Google/Alphabet aware of the unjustifiably high risk that its actions constituted and continue to constitute infringement of the '720 Patent. On information and belief, discovery will reveal additional facts and circumstances from which Google/Alphabet's knowledge and intent to infringe (or willful indifference), both before and after the filing of this action, may be inferred.

181. Accordingly, Google/Alphabet's infringement of the '720 Patent has also been and continues to be deliberate, intentional, and willful, and this is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees and costs pursuant to 35 U.S.C. §§ 284 and 285.

182. Google/Alphabet's infringement of Dialect's rights under the '720 Patent will continue to damage Dialect, causing irreparable harm for which there is no adequate remedy at law, unless enjoined by this Court.

FIFTH COUNT
(Infringement of U.S Patent No. 8,015,006)

183. Dialect incorporates by reference the allegations set forth in Paragraphs 1–182 as though fully set forth herein.

184. The claims of the '006 Patent are valid and enforceable.

185. The claims of the '006 Patent are directed to patentable subject matter. Particularly, the '006 Patent is directed to a novel, tangible voice recognition system. The inventive, tangible claimed structures of the '006 Patent improve on the natural language processing of a natural language utterance by a user. The claimed inventions provide specific concrete solutions to the problem of speech recognition in existing systems.

186. In violation of 35 U.S.C. § 271(a) and without authority from Plaintiff, Google/Alphabet has directly infringed by making, using, offering for sale, selling, and/or importing into the state of Delaware, this judicial district, and elsewhere in the United States products and services that embody the invention disclosed and claimed in the '006 Patent, including at least the Accused Google Assistant Products and Services.

187. Each of the Accused Google Assistant Products and Services contains elements that are identical or equivalent to each claimed element of the patented invention pointed out by at least Claim 5 of the '006 Patent.

188. Each of the Accused Google Assistant Products and Services comprises a method for processing natural language speech utterances with context-specific domain agents.

189. For example, Google describes Google Assistant as responding to a user generated natural language speech utterance according to the context of a user's request.⁴⁸

What you can ask Google Assistant

You can ask Google Assistant for info and for help with everyday tasks.

Important: Some queries won't work on all devices and in all languages.

For ideas about what Google Assistant can help with, ask "What can you do?"

What Google Assistant can do

Get local info

- **Weather:** What's the weather today?
- **Food:** Find pizza restaurants nearby.
- **Business hours:** Is Walgreens still open?
- **Navigation:** Navigate home.

Plan your day

- **Traffic:** How's the traffic to work?
- **Reminders:** Remind me to do laundry this evening. Remind me to call Mom every Sunday.
- **Calendar events:** When's my first meeting today? Add a meeting to my calendar.
- **Flights:** Is United flight 1463 on time?

Ask Google

- **Game updates:** Who won the Warriors game?
- **Calculations:** What's 20% of 80?
- **Dictionary:** What does "gregarious" mean?
- **Translations:** How do I say "Nice to meet you" in French?
- **Finance:** How's the S&P 500 doing?
- **Unit conversions:** How many kilometers in a mile?
- **Search:** Search for summer vacation ideas.
- **Image search:** Find pictures of kittens.
- **Web answer:** How do you remove wine stains from a rug?

⁴⁸ <https://support.google.com/assistant/answer/7172842?hl=en>

190. Each of the Accused Google Assistant Products and Services comprises receiving, at a speech unit coupled to a processing device, a natural language speech utterance that contains a request.

191. For example, Google describes Google Assistant as receiving user generated natural language speech utterances containing at least one request at a device running Google Assistant.⁴⁹

What you can ask Google Assistant

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- **Search:** Search for summer vacation ideas.
- **Image search:** Find pictures of kittens.
- **Web answer:** How do you remove wine stains from a rug?

⁴⁹ *Id.*

Google further describes its Assistant as “process[ing] the question and get[ting] text out of it.”⁵⁰

Got it. Let's say I ask Assistant something pretty straightforward, like, "Hey Google, where's the closest dog park?" – how would Assistant understand what I'm saying and respond to my query?

The first step is for Assistant to process that "Hey Google" and realize, "Ah, it looks like this person is now speaking to me and wants something from me."

Assistant picks up the rest of the audio, processes the question and gets text out of it. As it does that, it tries to understand what your sentence is about. What type of intention do you have?

192. Each of the Accused Google Assistant Products and Services comprises recognizing, at a speech recognition engine coupled to the processing device, one or more words or phrases contained in the utterance using information in one or more dictionary and phrase tables.

193. For example, Google describes Google Assistant as using “trainingPhrases[]” to “allow Google’s NLU to automatically” match words or phrases found in the user input.⁵¹

<code>trainingPhrases[]</code>	<p><code>string</code></p> <p>Training phrases allow Google's NLU to automatically match intents with user input. The more unique phrases that are provided, the better chance this intent will be matched. The following is the format of training phrase part which are annotated. Note that <code>auto</code> field is optional and the default behavior when <code>auto</code> is not specified is equivalent to <code>auto=false</code>. (<code>\$(<paramName> '<sample text>' auto=<true or false>)</code> <code>auto = true</code> means the part was auto annotated by NLU. <code>auto = false</code> means the part was annotated by the user. This is the default when <code>auto</code> is not specified. Example: "Book a flight from (<code>\$source 'San Francisco'</code> <code>auto=false</code>) to (<code>\$dest 'Vancouver'</code>)"</p>
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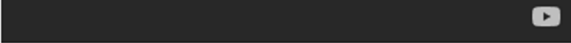
Google further describes its Assistant as using “define[d] custom training phrases” to “augment[] the Assistant NLU.”⁵²

⁵⁰ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

⁵¹ <https://developers.google.com/assistant/actionsdk/reference/rest/Shared.Types/Intent>

⁵² <https://developers.google.com/assistant/conversational/intents>

- **User intents** let you extend Assistant's ability to understand user requests that are specific to your brand and services. You define custom training phrases within an intent, which in turn generates an intent's language model. That language model augments the Assistant NLU, increasing its ability to understand even more.
- **System intents** have training data or other non-conversational input signals defined by Assistant. This means you don't need to define training phrases for these intents. Assistant matches these intents in a standard way, during well-known system events such as main invocation or when users don't provide any input.

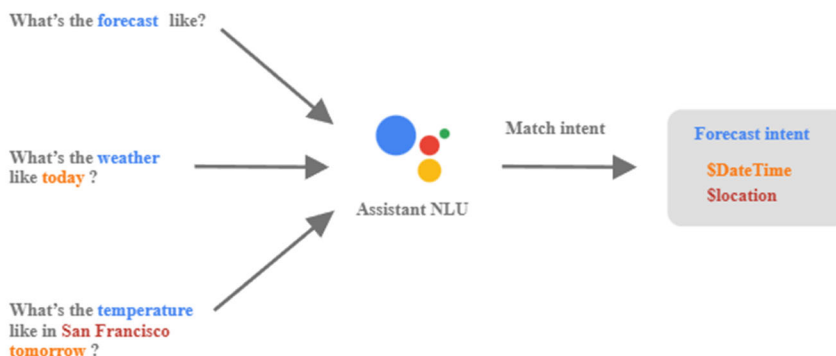


194. Each of the Accused Google Assistant Products and Services comprises parsing, at a parser coupled to the processing device, information relating to the utterance to determine a meaning associated with the utterance and a context associated with the request contained in the utterance, wherein the parsed information includes the one or more recognized words or phrases.

195. For example, Google describes Google Assistant as determining a context for the request in the natural language utterance based on one or more keywords.⁵³

For example, consider an easy user request like, "What's the forecast like today?" Other users might also ask, "What's the weather like right now?" or "What's the temperature like in San Francisco tomorrow?" Even with this simple question, you can see that conversational experiences are hard to implement, because interpreting and processing natural language requires a very robust language parser that's capable of understanding the nuances of language. Your code would have to handle all these different types of requests (and potentially many more) to carry out the same logic: looking up some forecast information for a time and location. For this reason, a traditional computer interface requires well-known, standard input requests to the detriment of the user experience, because it's easier to handle highly structured input.

However, when you build Conversational Actions, Assistant handles the natural language understanding (NLU) for you, so you can build open-ended, conversational interfaces easily. These interface tools let you understand the vast and varied nuances of human language and translate that to standard and structured meaning that your apps and services can understand. Let's take a look at how an Action might handle the previous examples for weather forecast requests.



⁵³ <https://developers.google.com/assistant/conversational/overview>

Google states that its Assistant “gets text out” of the question and identifies “the semantics, i.e. the meaning, of your question.”⁵⁴

Got it. Let’s say I ask Assistant something pretty straightforward, like, “Hey Google, where’s the closest dog park?” – how would Assistant understand what I’m saying and respond to my query?

The first step is for Assistant to process that “Hey Google” and realize, “Ah, it looks like this person is now speaking to me and wants something from me.”

Assistant picks up the rest of the audio, processes the question and gets text out of it. As it does that, it tries to understand what your sentence is about. What type of intention do you have?

To determine this, Assistant will parse the text of your question with another neural network that tries to identify the semantics, i.e. the meaning, of your question.

196. Each of the Accused Google Assistant Products and Services comprises formulating, at the parser, the request contained in the utterance in accordance with a grammar used by a domain agent associated with the determined context.

197. For example, Google describes Google Assistant as formulating requests contained in the user utterance in accordance with a specific structure for a weather query.⁵⁵

For example, you could create a weather agent that recognizes and responds to end-user questions about the weather. You would likely define an intent for questions about the weather forecast. If an end-user says “What’s the forecast?”, Dialogflow would match that end-user expression to the forecast intent. You can also define your intent to extract useful information from the end-user expression, like a time or location for the desired weather forecast. This extracted data is important for your system to perform a weather query for the end-user.



⁵⁴ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

⁵⁵ <https://cloud.google.com/dialogflow/es/docs/intents-overview>

Google further describes how the request contained in the user utterance can “include parameters that partially or entirely fill” parameters for a request.⁵⁶

In many cases, a previous intent match can include parameters that partially or entirely fill a corresponding scene's slot values. In these cases, all slots filled by intent parameters map to the scene's slot filling if the slot name matches the intent parameter name.

For example, if a user matches an intent to order a beverage by saying *"I want to order a large vanilla coffee"*, existing slots for size, flavor, and beverage type are considered filled in the corresponding scene if that scene defines same slots.

198. Each of the Accused Google Assistant Products and Services comprises determining one or more required values and one or more optional values associated with formulating the request in the grammar used by the domain agent.

199. For example, Google describes Google Assistant as supporting the determination of values associated with formulating the request, and it further describes supporting partial matches for optional values.⁵⁷

When the NLU engine detects a parameter match in user input, it extracts the value as a typed parameter, so you can carry out logic with it in a scene. If an intent parameter has the same name as a scene slot, the Assistant runtime automatically fills the scene slot with the value from the intent parameter. See the [slot value mapping](#) documentation for more information.

Intent parameters also support "partial" matches. For example, if you specify a type of `DateTime` and the user only provides a date, the NLU still extracts the partial value as a parameter.

200. Each of the Accused Google Assistant Products and Services comprises extracting one or more criteria and one or more parameters from one or more keywords contained in the one or more recognized words or phrases, wherein the parser extracts the one or more criteria and the one or more parameters using procedures sensitive to the determined context.

⁵⁶

https://developers.google.com/assistant/conversational/build/conversation#slot_value_mapping

⁵⁷ <https://developers.google.com/assistant/conversational/intents>

201. For example, Google describes Google Assistant as extracting a detected parameter in a user input.⁵⁸

1. When users say something, the Assistant NLU matches the input to an appropriate intent. An intent is matched if the *language model* for that intent can closely or exactly match the user input. You define the language model by specifying *training phrases*, or examples of things users might want to say. Assistant takes these training phrases and expands upon them to create the intent's language model.
2. When the Assistant NLU matches an intent, it can extract *parameters* that you need from the input. These parameters have *types* associated with them, such as a date or number. You annotate specific parts of an intent's training phrases to specify what parameters you want to extract.
3. A *scene* then processes the matched intent. You can think of scenes as the logic executors of an Action, doing the heavy lifting and carrying out logic necessary to drive a conversation forward. Scenes run in a loop, providing a flexible execution lifecycle that lets you do things like validate intent parameters, do slot filling, send prompts back to the user, and more.
4. When a scene is done executing, it typically sends a prompt back to users to continue the conversation or can end the conversation if appropriate.

202. Each of the Accused Google Assistant Products and Services comprises inferring one or more further criteria and one or more further parameters associated with the request using a dynamic set of prior probabilities or fuzzy possibilities.

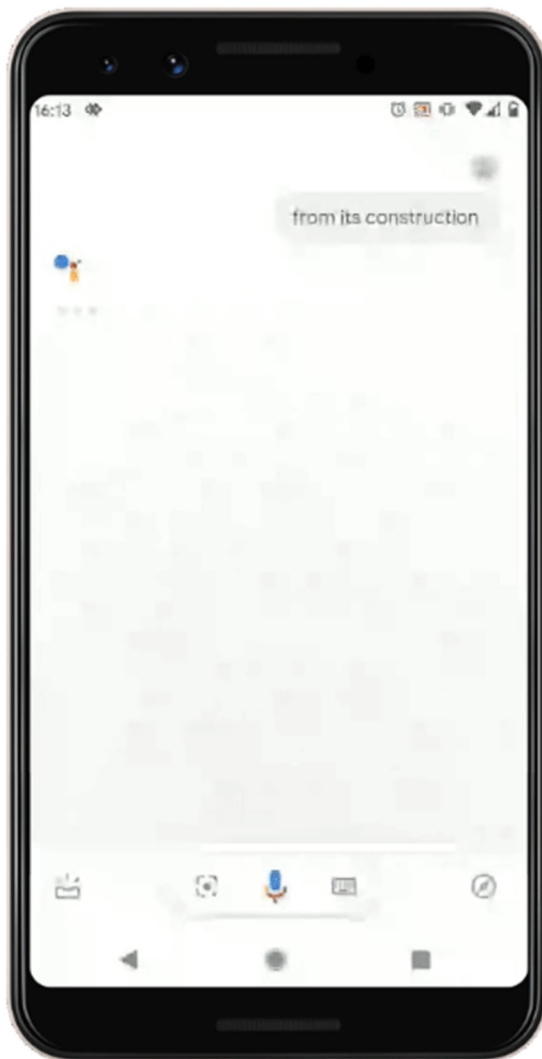
203. For example, Google describes Google Assistant as inferring context for a request using previous interactions and the history of the current interaction.⁵⁹

⁵⁸ <https://developers.google.com/assistant/conversational/actions>

⁵⁹ <https://blog.google/products/assistant/loud-and-clear-ai-improving-assistant-conversations/>

More natural conversations

We also applied BERT to further improve the quality of your conversations. Google Assistant uses your previous interactions and understands what's currently being displayed on your smartphone or smart display to respond to any follow-up questions, letting you have a more natural, back-and-forth conversation.

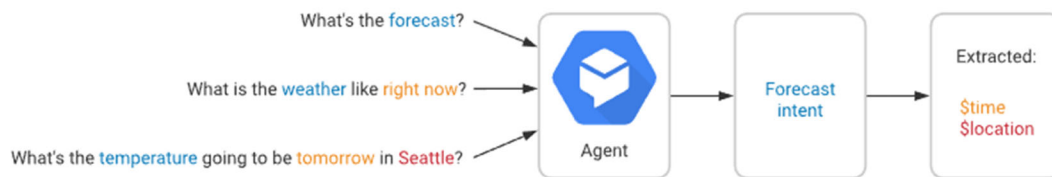


If you're having a conversation with your Assistant about Miami and you want more information, it will know that when you say "show me the nicest beaches" you mean beaches in Miami. Assistant can also understand questions that are referring to what you're looking at on your smartphone or tablet screen, like [who built the first one] or queries that look incomplete like [when] or [from its construction].

204. Each of the Accused Google Assistant Products and Services comprises transforming the one or more extracted criteria, the one or more extracted parameters, the one or more inferred criteria, and the one or more inferred parameters into one or more tokens having a format compatible with the grammar used by the domain agent, wherein the one or more tokens include all the required values and one or more of the optional values associated with formulating the request in the grammar used by the domain agent.

205. For example, Google describes Google Assistant as formulating requests in accordance with a specific structure for a weather query.⁶⁰

For example, you could create a weather agent that recognizes and responds to end-user questions about the weather. You would likely define an intent for questions about the weather forecast. If an end-user says "What's the forecast?", Dialogflow would match that end-user expression to the forecast intent. You can also define your intent to extract useful information from the end-user expression, like a time or location for the desired weather forecast. This extracted data is important for your system to perform a weather query for the end-user.



Google further describes how the request contained in the user utterance can “include parameters that partially or entirely fill” parameters for a request.⁶¹

In many cases, a previous intent match can include parameters that partially or entirely fill a corresponding scene's slot values. In these cases, all slots filled by intent parameters map to the scene's slot filling if the slot name matches the intent parameter name.

For example, if a user matches an intent to order a beverage by saying "I want to order a large vanilla coffee", existing slots for size, flavor, and beverage type are considered filled in the corresponding scene if that scene defines same slots.

⁶⁰ <https://cloud.google.com/dialogflow/es/docs/intents-overview>

⁶¹

https://developers.google.com/assistant/conversational/build/conversation#slot_value_mapping

Google further provides examples of how Google Assistant can transform variety of parameters and criteria into a formatted query.⁶²

English ▼ ⓘ

Action invocation phrases ^

Invocation phrases help users find and implicitly or explicitly invoke your Action.

How long does it take to get from \$origin-stop to \$destination-stop on the \$route ?

How long does the \$route \$vehicle-type from \$origin-stop to \$destination-stop take?

How long does the \$route from \$origin-stop to \$destination-stop take?

\$origin-stop

How long does the \$agency from \$origin-stop to \$destination-stop usually take?

What is the average time for the \$agency from \$origin-stop to \$destination-stop on \$date ?

What is the travel time from \$origin-stop to \$destination-stop ?

What is the average time from \$origin-stop to \$destination-stop ?

How long does the \$vehicle-type from \$origin-stop to \$destination-stop take?

How long is the \$agency from \$origin-stop to \$destination-stop supposed to take?

How long does the \$time \$vehicle-type from \$origin-stop to \$destination-stop take

What is the average travel time from \$origin-stop to \$destination-stop ?

How long does it take to get from \$origin-stop to \$destination-stop \$date \$time-period ?

How long does it take to get from \$origin-stop to \$destination-stop ?

EDIT IN DIALOGFLOW ↗

Parameters	origin-stop, destination-stop, date, time-period, agency, time, vehicle-type, route ▼
Fulfillment	Conversational ▼
Links	None ▼
User engagement	None ▼

⁶² https://developers.google.com/assistant/df-asdk/discovery/implicit#syntax_Requirements

206. Each of the Accused Google Assistant Products and Services comprises processing the formulated request with the domain agent associated with the determined context to generate a response to the utterance.

207. For example, Google describes Google Assistant as invoking Google Maps to generate a response to a query.⁶³

In this case, it will figure out that it's a question it needs to search for — it's not you asking to turn on your lights or anything like that. And since this is a location-based question, if your settings allow it, Assistant can send the geographic data of your device to Google Maps to return the results of which dog park is near you.

208. Each of the Accused Google Assistant Products and Services comprises presenting the generated response to the utterance via the speech unit.

209. For example, Google describes Google Assistant as providing the results “in the appropriate format for your device.”⁶⁴

Then Assistant will sort its possible answers based on things like how sure it is that it understood you correctly and how relevant its various potential answers are. It will decide on the best answer, then provide it in the appropriate format for your device. It might be just a *speaker*, in which case it can give you spoken information. If you have a display in front of you, it could show you a map with walking directions.

210. Google/Alphabet has long known about the '006 Patent.

211. On information and belief, Google/Alphabet actively monitors patent activity through information that is available to the public from the United States Patent and Trademark Office and from commercial and foreign government databases (including commercial databases operated by Google/Alphabet). For example, on or about October 6, 2014, the U.S. Patent Office identified the '209 Patent, to which the '006 Patent claims priority, to Google as prior art to

⁶³ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

⁶⁴ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

Google's own United States patent application no. 13/888,770. On information and belief, Google/Alphabet was thereafter aware of the related '006 Patent. On September 26, 2016, Google/Alphabet disclosed the '006 Patent as prior art to its own patent application no. 14/095,095. On December 9, 2016, Google/Alphabet disclosed the '006 Patent as prior art to its own patent application no. 15/384,004.

212. Google/Alphabet knew or should have known that Google/Alphabet's actions infringe one or more of the claims of the '006 Patent because Google/Alphabet has the technical expertise to understand the scope and content of the '006 Patent, because Google/Alphabet is a major provider of voice recognition products and services, and because Google/Alphabet knows the design, function, and operation of the Accused Google Assistant Products and Services, as well as the nature and extent of their use by others. At a minimum, Google/Assistant has knowledge of the '006 Patent at least as of the filing of this Complaint.

213. Further, on information and belief, Google/Alphabet has actively induced and/or contributed to infringement of at least Claim 1 of the '006 Patent in violation of at least 35 U.S.C. § 271(b) and (c).

214. Users of the Accused Google Assistant Products and Services directly infringe at least Claim 1 of the '006 Patent when they use the Accused Google Assistant Products and Services in the ordinary, customary, and intended way.

215. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) include, without limitation and with specific intent to encourage infringement, knowingly inducing businesses and consumers to use the Accused Google Assistant Products and Services within the United States in the ordinary, customary, and intended way by, directly or through intermediaries, supplying the Accused Google Assistant Products and Services to

businesses and consumers within the United States, and instructing and encouraging such businesses and consumers to use the Accused Google Assistant Products and Services in the ordinary, customary, and intended way, which Google/Alphabet knew infringes at least Claim 1 of the '006 Patent, or, alternatively, was willfully blind to the infringement.

216. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) further include, without limitation and with specific intent to encourage the infringement, knowingly inducing Google/Alphabet's customers to commit acts of infringement with respect to the Accused Google Assistant Products and Services within the United States, by, directly or through intermediaries, instructing and encouraging such customers to import, make, use, sell, offer to sell, or otherwise commit acts of infringement with respect to the Accused Google Assistant Products and Services in the United States, which Google/Alphabet knew infringes at least Claim 1 of the '006 Patent, or, alternatively, was willfully blind to the infringement.

217. On information and belief, in violation of 35 U.S.C. § 271(c), Google/Alphabet's contributory infringement further includes offering to sell or selling within the United States, or importing into the United States, components of the patented invention of and/or a material or apparatus for use in practicing at least Claim 1 of the '006 Patent, constituting a material part of the invention. On information and belief, Google/Alphabet knows and has known the same to be especially made or especially adapted for use in an infringement of the '006 Patent, and such components are not a staple article or commodity of commerce suitable for substantial noninfringing use.

218. Google/Alphabet is not licensed or otherwise authorized to practice the claims of the '006 Patent.

219. Thus, by its acts, Google/Alphabet has injured Dialect and is liable to Dialect for directly and/or indirectly infringing one or more claims of the '006 Patent, whether literally or under the doctrine of equivalents, including without limitation Claim 1.

220. As a result of Google/Alphabet's infringement of the '006 Patent, Dialect has suffered monetary damages, and seeks recovery, in an amount to be proven at trial, adequate to compensate for Google/Alphabet's infringement, but in no event less than a reasonable royalty with interest and costs.

221. On information and belief, in addition to Google/Alphabet's knowledge of the '006 Patent as set forth above both prior to and as a result of the filing of this Complaint, Google/Alphabet has had, and continues to have, the specific intent to infringe, through its deliberate and intentional infringement or, alternatively, through its willfully blind disregard of the '006 Patent by knowing there was a high probability of infringement but taking deliberate actions to avoid confirming that infringement. The filing of this action has also made Google/Alphabet aware of the unjustifiably high risk that its actions constituted and continue to constitute infringement of the '006 Patent. On information and belief, discovery will reveal additional facts and circumstances from which Google/Alphabet's knowledge and intent to infringe (or willful indifference), both before and after the filing of this action, may be inferred.

222. Accordingly, Google/Alphabet's infringement of the '006 Patent has also been and continues to be deliberate, intentional, and willful, and this is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees and costs pursuant to 35 U.S.C. §§ 284 and 285.

223. Google/Alphabet's infringement of Dialect's rights under the '006 Patent will continue to damage Dialect, causing irreparable harm for which there is no adequate remedy at law, unless enjoined by this Court.

SIXTH COUNT
(Infringement of U.S Patent No. 8,447,607)

224. Dialect incorporates by reference the allegations set forth in Paragraphs 1–223 as though fully set forth herein.

225. The claims of the '607 Patent are valid and enforceable.

226. The claims of the '607 Patent are directed to patentable subject matter. Particularly, the '607 Patent is directed to a novel, tangible voice recognition system. The inventive, tangible claimed structures of the '607 Patent improve on the natural language processing of a natural language utterance by a user. The claimed inventions provide specific concrete solutions to the problem of speech recognition in existing systems.

227. In violation of 35 U.S.C. § 271(a) and without authority from Plaintiff, Google/Alphabet has directly infringed by making, using, offering for sale, selling, and/or importing into the state of Delaware, this judicial district, and elsewhere in the United States products and services that embody the invention disclosed and claimed in the '607 Patent, including at least the Accused Google Assistant Products and Services.

228. Each of the Accused Google Assistant Products and Services contains elements that are identical or equivalent to each claimed element of the patented invention pointed out by at least Claim 14 of the '607 Patent.

229. Each of the Accused Google Assistant Products and Services comprises a device for processing natural language inputs, comprising one or more processors.

230. For example, Google describes Google Assistant, which runs on devices that comprise one or more processors, as responding to a user generated natural language speech utterance.⁶⁵

What you can ask Google Assistant

You can ask Google Assistant for info and for help with everyday tasks.

Important: Some queries won't work on all devices and in all languages.

For ideas about what Google Assistant can help with, ask "What can you do?"

What Google Assistant can do

Get local info

- **Weather:** What's the weather today?
- **Food:** Find pizza restaurants nearby.
- **Business hours:** Is Walgreens still open?
- **Navigation:** Navigate home.

Plan your day

- **Traffic:** How's the traffic to work?
- **Reminders:** Remind me to do laundry this evening. Remind me to call Mom every Sunday.
- **Calendar events:** When's my first meeting today? Add a meeting to my calendar.
- **Flights:** Is United flight 1463 on time?

Ask Google

- **Game updates:** Who won the Warriors game?
- **Calculations:** What's 20% of 80?
- **Dictionary:** What does "gregarious" mean?
- **Translations:** How do I say "Nice to meet you" in French?
- **Finance:** How's the S&P 500 doing?
- **Unit conversions:** How many kilometers in a mile?
- **Search:** Search for summer vacation ideas.
- **Image search:** Find pictures of kittens.
- **Web answer:** How do you remove wine stains from a rug?

231. Each of the Accused Google Assistant Products and Services comprises receiving a natural language utterance from a user.

232. For example, Google describes Google Assistant as receiving user generated natural language speech utterances containing at least one request.⁶⁶

⁶⁵ <https://support.google.com/assistant/answer/7172842?hl=en>

⁶⁶ *Id.*

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- **Image search:** Find pictures of kittens.
- **Web answer:** How do you remove wine stains from a rug?

Google further describes its Assistant as “process[ing] the question and get[ting] text out of it.”⁶⁷

Got it. Let's say I ask Assistant something pretty straightforward, like, “Hey Google, where's the closest dog park?” – how would Assistant understand what I'm saying and respond to my query?

The first step is for Assistant to process that “Hey Google” and realize, “Ah, it looks like this person is now speaking to me and wants something from me.”

Assistant picks up the rest of the audio, processes the question and gets text out of it. As it does that, it tries to understand what your sentence is about. What type of intention do you have?

⁶⁷ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

233. Each of the Accused Google Assistant Products and Services comprises identifying the user who provided the natural language utterance.

234. For example, Google describes Google Assistant as using Voice Match to identify a user by their voice.⁶⁸


Access Google Assistant with your voice

You can get hands-free help from Google Assistant on your phone or watch by saying "Hey Google." "Hey Google" requires Voice Match to recognize it's you.

If you're using a speaker or Smart Display with Google Assistant built-in, [learn how to use Voice Match to link your voice](#) to the device.


[Android](#) [iPhone & iPad](#)

Turn on Google Assistant

1. On your Android phone or tablet, open the Google Assistant app .
2. If Google Assistant is off, you'll get the option to turn it on at the bottom. Tap **Turn on**.
 - [Learn how to set up Google Assistant on your phone or tablet.](#)

[Turn off Google Assistant](#) 

Turn on "Hey Google" and teach Google Assistant to recognize your voice

1. On your Android phone or tablet, open the Google Assistant app  and say, "Assistant settings."
2. Under "Popular settings," tap **Hey Google & Voice Match**.
3. Turn on **Hey Google**.
 - If you don't find **Hey Google**, turn on **Google Assistant**.
 - **Tip:** If you're signed in to a Google Workspace for Education account on your device and can't turn on "Hey Google," the admin might have turned off settings that are needed for "Hey Google" to work. Please contact your admin for more details.
4. Follow the prompts to set up Voice Match so Google Assistant can recognize when you say "Hey Google."

Tip: If you want to get hands-free help from Google Assistant while your Android phone or tablet is locked, make sure your Assistant on lock screen setting is turned on.

⁶⁸ <https://support.google.com/assistant/answer/7394306>

235. Each of the Accused Google Assistant Products and Services comprises generating a speech-based transcription based on a personal cognitive model associated with the user and a general cognitive model, wherein the personal cognitive model includes information on one or more prior interactions between the device and the user, and wherein the general cognitive model includes information on one or more prior interactions between the device and a plurality of users.

236. For example, Google describes Google Assistant as generating a speech based transcription based, in part, on interactions with previous users and their satisfaction with similar responses.⁶⁹

To make it a little more complicated: If I were to ask something a bit more ambiguous, like, “Hey Google, what is the most popular dog?” – how would it know if I meant dog breed, dog name or the most popular famous dog?

In the first example, Assistant has to understand that you’re looking for a location (“where is”) and what you’re looking for (“a dog park”), so it makes sense to use Maps to help. In this, Assistant would recognize it’s a more open-ended question and call upon Search instead. What this really comes down to is identifying the best interpretation. One thing that is helpful is that Assistant can rank how satisfied previous users were with similar responses to similar questions – that can help it decide how certain it is of its interpretation. Ultimately, that question would go to Search, and the results would be proposed to you with whatever formatting is best for your device.

Google further describes Google Assistant as processing “audio of someone speaking” and “turn it into text.”⁷⁰

For Assistant, a deep neural network can receive an input, like the audio of someone speaking, and process that information across a stack of layers to turn it into text. This is what we call “speech recognition.” Then, the text is processed by another stack of layers to parse it into pieces of information that help the Assistant understand what you need and help you by displaying a result or taking an action on your behalf. This is what we call “natural language processing.”

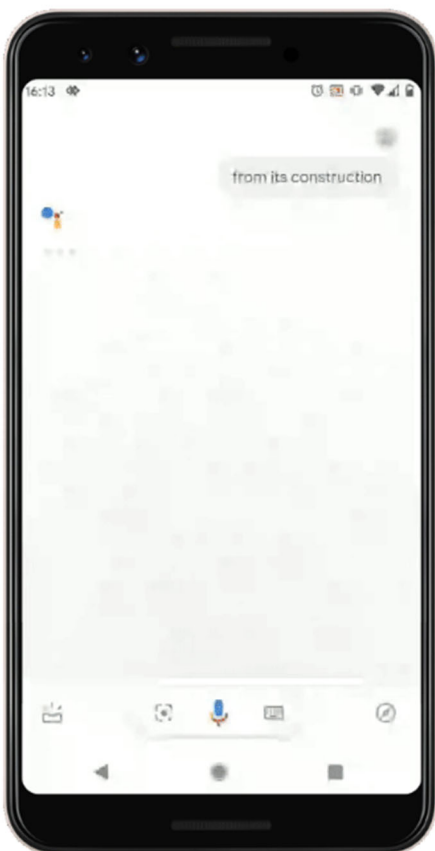
⁶⁹ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

⁷⁰ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

Google further describes how Google Assistant uses previous interactions with the user in processing the user's natural language utterance.⁷¹

More natural conversations

We also applied BERT to further improve the quality of your conversations. Google Assistant uses your previous interactions and understands what's currently being displayed on your smartphone or smart display to respond to any follow-up questions, letting you have a more natural, back-and-forth conversation.



If you're having a conversation with your Assistant about Miami and you want more information, it will know that when you say "show me the nicest beaches" you mean beaches in Miami. Assistant can also understand questions that are referring to what you're looking at on your smartphone or tablet screen, like [who built the first one] or queries that look incomplete like [when] or [from its construction].

⁷¹ <https://blog.google/products/assistant/loud-and-clear-ai-improving-assistant-conversations/>

237. Each of the Accused Google Assistant Products and Services comprises identifying, from among a plurality of entries that are in a context stack and that are each indicative of context, an entry that matches information in the speech-based transcription.

238. For example, Google describes Google Assistant as determining the meaning of the user's question from parsing the context of the utterance and determining the correct software module or modules to invoke based on the information in the parsed utterance.⁷²

Got it. Let's say I ask Assistant something pretty straightforward, like, "Hey Google, where's the closest dog park?" – how would Assistant understand what I'm saying and respond to my query?

The first step is for Assistant to process that "Hey Google" and realize, "Ah, it looks like this person is now speaking to me and wants something from me."

Assistant picks up the rest of the audio, processes the question and gets text out of it. As it does that, it tries to understand what your sentence is about. What type of intention do you have?

To determine this, Assistant will parse the text of your question with another neural network that tries to identify the semantics, i.e. the meaning, of your question.

In this case, it will figure out that it's a question it needs to search for – it's not you asking to turn on your lights or anything like that. And since this is a location-based question, if your settings allow it, Assistant can send the geographic data of your device to Google Maps to return the results of which dog park is near you.

Then Assistant will sort its possible answers based on things like how sure it is that it understood you correctly and how relevant its various potential answers are. It will decide on the best answer, then provide it in the appropriate format for your device. It might be just a *speaker*, in which case it can give you spoken information. If you have a display in front of you, it could show you a map with walking directions.

To make it a little more complicated: If I were to ask something a bit more ambiguous, like, "Hey Google, what is the most popular dog?" – how would it know if I meant dog breed, dog name or the most popular famous dog?

In the first example, Assistant has to understand that you're looking for a location ("where is") and what you're looking for ("a dog park"), so it makes sense to use Maps to help. In this, Assistant would recognize it's a more open-ended question and call upon Search instead. What this really comes down to is identifying the best interpretation. One thing that is helpful is that Assistant can rank how satisfied previous users were with similar responses to similar questions – that can help it decide how certain it is of its interpretation. Ultimately, that question would go to Search, and the results would be proposed to you with whatever formatting is best for your device.

⁷² <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

239. Each of the Accused Google Assistant Products and Services comprises identifying a domain agent associated with the entry in the context stack.

240. For example, Google describes Google Assistant as selecting, for example, either Maps or Search to respond to requests associated with the determined context.⁷³

To make it a little more complicated: If I were to ask something a bit more ambiguous, like, “Hey Google, what is the most popular dog?” – how would it know if I meant dog breed, dog name or the most popular famous dog?

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Google’s own research papers describe understanding user utterances by, in part, “detecting the domain of the utterance.”⁷⁴

1. Introduction

In traditional goal-oriented dialogue systems, user utterances are typically understood in terms of hand-designed semantic frames comprised of domains, intents and slots [1]. Understanding the user utterance involves (i) detecting the domain of the utterance, (ii) classifying the intent of the utterance based on

241. Each of the Accused Google Assistant Products and Services comprises determining a request based on the speech-based transcription.

242. For example, Google describes Google Assistant as determining the request contained in the user’s utterance.⁷⁵

⁷³ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

⁷⁴ <https://research.google.com/pubs/archive/553ee0ffc2c91cbb340860b5f109a3f413438de2.pdf>

⁷⁵ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

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243. Each of the Accused Google Assistant Products and Services comprises communicating the request to the domain agent, wherein the domain agent is configured to generate a response to the user.

244. For example, Google describes Google Assistant as invoking Maps to respond “in the appropriate format for your device.”⁷⁶

⁷⁶ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

Got it. Let's say I ask Assistant something pretty straightforward, like, "Hey Google, where's the closest dog park?" – how would Assistant understand what I'm saying and respond to my query?

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Assistant picks up the rest of the audio, processes the question and gets text out of it. As it does that, it tries to understand what your sentence is about. What type of intention do you have?

To determine this, Assistant will parse the text of your question with another neural network that tries to identify the semantics, i.e. the meaning, of your question.

In this case, it will figure out that it's a question it needs to search for – it's not you asking to turn on your lights or anything like that. And since this is a location-based question, if your settings allow it, Assistant can send the geographic data of your device to Google Maps to return the results of which dog park is near you.

Then Assistant will sort its possible answers based on things like how sure it is that it understood you correctly and how relevant its various potential answers are. It will decide on the best answer, then provide it in the appropriate format for your device. It might be just a [speaker](#), in which case it can give you spoken information. If you have a display in front of you, it could show you a map with walking directions.

245. Google/Alphabet has long known about the '607 Patent.

246. On information and belief, Google/Alphabet actively monitors patent activity through information that is available to the public from the United States Patent and Trademark Office and from commercial and foreign government databases (including commercial databases operated by Google/Alphabet). For example, on May 27, 2015, Google/Alphabet disclosed the '607 Patent as prior art to its own patent application no. 14/723,305. On February 4, 2016, Google/Alphabet disclosed the '607 Patent as prior art to its own patent application no. 15/051,778. On or about January 21, 2022, the U.S. Patent Office identified the '607 Patent to Google/Alphabet as prior art to Google/Alphabet's own United States patent application no. 16/609,461.

247. Google/Alphabet knew or should have known that Google/Alphabet's actions infringe one or more of the claims of the '607 Patent because Google/Alphabet has the technical expertise to understand the scope and content of the '607 Patent, because Google/Alphabet is a major provider of voice recognition products and services, and because Google/Alphabet knows

the design, function, and operation of the Accused Google Assistant Products and Services, as well as the nature and extent of their use by others. At a minimum, Google/Assistant has knowledge of the '607 Patent at least as of the filing of this Complaint.

248. Further, on information and belief, Google/Alphabet has actively induced and/or contributed to infringement of at least Claim 14 of the '607 Patent in violation of at least 35 U.S.C. § 271(b), (c), and (f).

249. Users of the Accused Google Assistant Products and Services directly infringe at least Claim 14 of the '607 Patent when they use the Accused Google Assistant Products and Services in the ordinary, customary, and intended way.

250. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) include, without limitation and with specific intent to encourage infringement, knowingly inducing businesses and consumers to use the Accused Google Assistant Products and Services within the United States in the ordinary, customary, and intended way by, directly or through intermediaries, supplying the Accused Google Assistant Products and Services to businesses and consumers within the United States, and instructing and encouraging such businesses and consumers to use the Accused Google Assistant Products and Services in the ordinary, customary, and intended way, which Google/Alphabet knew infringes at least Claim 14 of the '607 Patent, or, alternatively, was willfully blind to the infringement.

251. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) further include, without limitation and with specific intent to encourage the infringement, knowingly inducing Google/Alphabet's customers to commit acts of infringement with respect to the Accused Google Assistant Products and Services within the United States, by, directly or through intermediaries, instructing and encouraging such customers to import, make,

use, sell, offer to sell, or otherwise commit acts of infringement with respect to the Accused Google Assistant Products and Services in the United States, which Google/Alphabet knew infringes at least Claim 14 of the '607 Patent, or, alternatively, was willfully blind to the infringement.

252. On information and belief, in violation of 35 U.S.C. § 271(c), Google/Alphabet's contributory infringement further includes offering to sell or selling within the United States, or importing into the United States, components of the patented invention of and/or a material or apparatus for use in practicing at least Claim 14 of the '607 Patent, constituting a material part of the invention. On information and belief, Google/Alphabet knows and has known the same to be especially made or especially adapted for use in an infringement of the '607 Patent, and such components are not a staple article or commodity of commerce suitable for substantial noninfringing use.

253. On information and belief, in violation of 35 U.S.C. § 271(f)(1), Google/Alphabet's infringement further includes without authority supplying or causing to be supplied in or from the United States all or a substantial portion of the components of the patented invention of at least Claim 14 of the '607 Patent, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States.

254. On information and belief, in violation of 35 U.S.C. § 271(f)(2), Google/Alphabet's infringement further includes without authority supplying or causing to be supplied in or from the United States components of the patented invention of at least Claim 14 of the '607 Patent that are especially made or especially adapted for use in the invention and not staple articles or commodities of commerce suitable for substantial noninfringing use, where such components are uncombined in whole or in part, knowing that such components are so made or adapted and

intending that such components will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States.

255. Google/Alphabet is not licensed or otherwise authorized to practice the claims of the '607 Patent.

256. Thus, by its acts, Google/Alphabet has injured Dialect and is liable to Dialect for directly and/or indirectly infringing one or more claims of the '607 Patent, whether literally or under the doctrine of equivalents, including without limitation Claim 14.

257. As a result of Google/Alphabet's infringement of the '607 Patent, Dialect has suffered monetary damages, and seeks recovery, in an amount to be proven at trial, adequate to compensate for Google/Alphabet's infringement, but in no event less than a reasonable royalty with interest and costs.

258. On information and belief, in addition to Google/Alphabet's knowledge of the '607 Patent as set forth above both prior to and as a result of the filing of this Complaint, Google/Alphabet has had, and continues to have, the specific intent to infringe, through its deliberate and intentional infringement or, alternatively, through its willfully blind disregard of the '607 Patent by knowing there was a high probability of infringement but taking deliberate actions to avoid confirming that infringement. The filing of this action has also made Google/Alphabet aware of the unjustifiably high risk that its actions constituted and continue to constitute infringement of the '607 Patent. On information and belief, discovery will reveal additional facts and circumstances from which Google/Alphabet's knowledge and intent to infringe (or willful indifference), both before and after the filing of this action, may be inferred.

259. Accordingly, Google/Alphabet's infringement of the '607 Patent has also been and continues to be deliberate, intentional, and willful, and this is therefore an exceptional case

warranting an award of enhanced damages and attorneys' fees and costs pursuant to 35 U.S.C. §§ 284 and 285.

260. Google/Alphabet's infringement of Dialect's rights under the '607 Patent will continue to damage Dialect, causing irreparable harm for which there is no adequate remedy at law, unless enjoined by this Court.

SEVENTH COUNT
(Infringement of U.S Patent No. 8,849,652)

261. Dialect incorporates by reference the allegations set forth in Paragraphs 1–260 as though fully set forth herein.

262. The claims of the '652 Patent are valid and enforceable.

263. The claims of the '652 Patent are directed to patentable subject matter. Particularly, the '652 Patent is directed to a novel, tangible voice recognition system. The inventive, tangible claimed structures of the '652 Patent improve on the natural language processing of a natural language utterance by a user. The claimed inventions provide specific concrete solutions to the problem of speech recognition in existing systems.

264. In violation of 35 U.S.C. § 271(a) and without authority from Plaintiff, Google/Alphabet has directly infringed by making, using, offering for sale, selling, and/or importing into the state of Delaware, this judicial district, and elsewhere in the United States products and services that embody the invention disclosed and claimed in the '652 Patent, including at least the Accused Google Assistant Products and Services.

265. Each of the Accused Google Assistant Products and Services contains elements that are identical or equivalent to each claimed element of the patented invention pointed out by at least Claim 1 of the '652 Patent.

266. Each of the Accused Google Assistant Products and Services comprises a system for processing natural language utterances where recognized words of the natural language utterances alone are insufficient to completely determine one or more commands or requests.

267. For example, Google describes Google Assistant as responding to a user generated natural language speech utterance, wherein the recognized words are insufficient alone to respond to the user.⁷⁷

What you can ask Google Assistant

You can ask Google Assistant for info and for help with everyday tasks.

Important: Some queries won't work on all devices and in all languages.

For ideas about what Google Assistant can help with, ask "What can you do?"

What Google Assistant can do

Get local info

- **Weather:** What's the weather today?
- **Food:** Find pizza restaurants nearby.
- **Business hours:** Is Walgreens still open?
- **Navigation:** Navigate home.

Plan your day

- **Traffic:** How's the traffic to work?
- **Reminders:** Remind me to do laundry this evening. Remind me to call Mom every Sunday.
- **Calendar events:** When's my first meeting today? Add a meeting to my calendar.
- **Flights:** Is United flight 1463 on time?

Ask Google

- **Game updates:** Who won the Warriors game?
- **Calculations:** What's 20% of 80?
- **Dictionary:** What does "gregarious" mean?
- **Translations:** How do I say "Nice to meet you" in French?
- **Finance:** How's the S&P 500 doing?
- **Unit conversions:** How many kilometers in a mile?
- **Search:** Search for summer vacation ideas.
- **Image search:** Find pictures of kittens.
- **Web answer:** How do you remove wine stains from a rug?

Google specifically identifies example utterances for which the words alone are insufficient to completely determine the request.⁷⁸

⁷⁷ <https://support.google.com/assistant/answer/7172842?hl=en>

⁷⁸ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

To make it a little more complicated: If I were to ask something a bit more ambiguous, like, “Hey Google, what is the most popular dog?” – how would it know if I meant dog breed, dog name or the most popular famous dog?

In the first example, Assistant has to understand that you’re looking for a location (“where is”) and what you’re looking for (“a dog park”), so it makes sense to use Maps to help. In this, Assistant would recognize it’s a more open-ended question and call upon Search instead. What this really comes down to is identifying the best interpretation. One thing that is helpful is that Assistant can rank how satisfied previous users were with similar responses to similar questions – that can help it decide how certain it is of its interpretation. Ultimately, that question would go to Search, and the results would be proposed to you with whatever formatting is best for your device.

268. Each of the Accused Google Assistant Products and Services comprises one or more physical processors programmed with one or more computer program instructions which, when executed, cause the one or more physical processors to: generate a first context stack associated with a first device, the first context stack comprising context information that corresponds to a plurality of prior utterances.

269. For example, Google describes Google Assistant, which runs on one or more physical processors, as storing past activity associated with a device to provide more personalized responses.⁷⁹

Delete your Google Assistant activity

Your Google Assistant stores your past activity to do things like remember your interests and give more personalized responses. You can find or delete your past activity at any time.

Learn more about how we secure and protect your data in the [Google Safety Center](#) .

270. Each of the Accused Google Assistant Products and Services comprises synchronizing the first context stack with a second context stack associated with a second device

⁷⁹ <https://support.google.com/assistant/answer/7108295>

such that the context information of the first context stack is updated based on related context information of the second context stack.

271. For example, Google describes Google Assistant as syncing activity across multiple devices in a home.⁸⁰

Share a home and devices in the Google Home app

Important: If you use the Nest app and haven't migrated to a Google Account, you [manage homes](#) and [people who share access](#) to your home with the Nest app.

To organize and manage your devices in the Google Home app, you can create a home. Then, you can invite home members who will share control of the home and its devices. For example, you can put your grouped living room speakers, office lights, and thermostat into a home, and invite your family to be members of that home.

Google further describes that devices, such as Smart Displays, Smart Clocks, and speakers, can be grouped within a home.⁸¹

⁸⁰ <https://support.google.com/googlenest/answer/9155535>

⁸¹ <https://support.google.com/assistant/answer/9210727?hl=en>

Group your Google Assistant devices

You can create groups of speakers, Smart Displays, and Smart Clocks so all of your devices play the same audio throughout your house.

This feature doesn't work on Bose or Sonos speakers that have the Google Assistant.

What you need

You need two or more of the devices listed below. You can group speakers, Smart Displays, and Smart Clocks in any combination.

- Google Home
- Google Nest Speakers
- Chromecast (2nd generation and above)
- Smart Displays with Google Assistant
- Chromecast Audio
- Speakers with Chromecast built-in
- Smart Clock

Google further describes that Voice Match and media can be used such that “YouTube videos or some TV shows or movies” can be synchronized across devices so that a user can “continue playback from [their] last saved spot.”⁸²

⁸² <https://support.google.com/googlenest/answer/7342711>

Voice Match and media on shared Google Nest or Home devices

A Google Nest or Home speaker or display is often shared among household members. When each person in your household uses Voice Match, all of you will enjoy a more customized media experience.

When you set up Voice Match on a shared speaker or display, you can do things like:

- Choose your own default music services.
- Get a personalized music experience based on your listening history, liked songs, and other details of your past interaction with the music service.
- Control your own private library for the music service, which allows you to access your saved songs and playlists.
- Can ask to play recommended YouTube videos or some TV shows or movies from a linked streaming service, which allows you to continue playback from your last saved spot.

272. Each of the Accused Google Assistant Products and Services comprises receiving a natural language utterance associated with a command or request.

273. For example, Google describes Google Assistant as receiving user generated natural language speech utterances containing at least one request.⁸³

⁸³ *Id.*

What you can ask Google Assistant

You can ask Google Assistant for info and for help with everyday tasks.

Important: Some queries won't work on all devices and in all languages.

For ideas about what Google Assistant can help with, ask "What can you do?"

What Google Assistant can do

Get local info

- **Weather:** What's the weather today?
- **Food:** Find pizza restaurants nearby.
- **Business hours:** Is Walgreens still open?
- **Navigation:** Navigate home.

Plan your day

- **Traffic:** How's the traffic to work?
- **Reminders:** Remind me to do laundry this evening. Remind me to call Mom every Sunday.
- **Calendar events:** When's my first meeting today? Add a meeting to my calendar.
- **Flights:** Is United flight 1463 on time?

Ask Google

- **Game updates:** Who won the Warriors game?
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- **Translations:** How do I say "Nice to meet you" in French?
- **Finance:** How's the S&P 500 doing?
- **Unit conversions:** How many kilometers in a mile?
- **Search:** Search for summer vacation ideas.
- **Image search:** Find pictures of kittens.
- **Web answer:** How do you remove wine stains from a rug?

274. Each of the Accused Google Assistant Products and Services comprises determining one or more words of the natural language utterance by performing speech recognition on the natural language utterance.

275. For example, Google describes Google Assistant as “process[ing] the question and get[ting] text out of it.”⁸⁴

⁸⁴ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

Got it. Let's say I ask Assistant something pretty straightforward, like, "Hey Google, where's the closest dog park?" – how would Assistant understand what I'm saying and respond to my query?

The first step is for Assistant to process that "Hey Google" and realize, "Ah, it looks like this person is now speaking to me and wants something from me."

Assistant picks up the rest of the audio, processes the question and gets text out of it. As it does that, it tries to understand what your sentence is about. What type of intention do you have?

276. Each of the Accused Google Assistant Products and Services comprises determining the command or request based on the one or more words and the updated context information.

277. For example, Google describes Google Assistant as determining media playback related commands and requests, such as "Next song," or "What's playing," which are processed using updated information from the shared home devices.⁸⁵

Use single or multiple voice queries

Note: If you have [Look and Talk](#) (English only) or [quick phrases](#) (US English only) enabled on your Nest Hub Max, you can also activate Google Assistant without "Hey Google."

Single voice queries

Simply say "Ok Google" or "Hey Google" before any of the voice queries below.

Multiple voice queries

Learn how to [ask your Assistant to do multiple things at once](#) (US English only).

Listen to media

Music ^

To do this:	Say "Hey Google," then:
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⁸⁵ <https://support.google.com/googlenest/answer/7207759?hl=en#zippy=%2Cmusic>

Play next song	"Next" "Skip" "Next song"
What's playing	"What's playing?" "What song is playing?" "What artist is playing?"

278. Google/Alphabet has long known about the '652 Patent.

279. On information and belief, Google/Alphabet actively monitors patent activity through information that is available to the public from the United States Patent and Trademark Office and from commercial and foreign government databases (including commercial databases operated by Google/Alphabet). For example, on May 27, 2015, Google disclosed the '607 Patent, to which the '652 Patent claims priority, as prior art to its own patent application no. 14/723,305. On information and belief, Google/Alphabet thereafter monitored the prosecution of the applications continuing from the '607 Patent, including the application leading to the '652 Patent, and was aware of the '652 Patent at or soon after its issuance from the U.S. Patent Office. On or about January 21, 2022, the U.S. Patent Office identified the '652 Patent to Google/Alphabet as prior art to Google/Alphabet's own United States patent application no. 16/609,461.

280. Google/Alphabet knew or should have known that Google/Alphabet's actions infringe one or more of the claims of the '652 Patent because Google/Alphabet has the technical expertise to understand the scope and content of the '652 Patent, because Google/Alphabet is a major provider of voice recognition products and services, and because Google/Alphabet knows the design, function, and operation of the Accused Google Assistant Products and Services, as well as the nature and extent of their use by others. At a minimum, Google/Assistant has knowledge of the '652 Patent at least as of the filing of this Complaint.

281. Further, on information and belief, Google/Alphabet has actively induced and/or contributed to infringement of at least Claim 1 of the '652 Patent in violation of at least 35 U.S.C. § 271(b), (c), and (f).

282. Users of the Accused Google Assistant Products and Services directly infringe at least Claim 1 of the '652 Patent when they use the Accused Google Assistant Products and Services in the ordinary, customary, and intended way.

283. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) include, without limitation and with specific intent to encourage infringement, knowingly inducing businesses and consumers to use the Accused Google Assistant Products and Services within the United States in the ordinary, customary, and intended way by, directly or through intermediaries, supplying the Accused Google Assistant Products and Services to businesses and consumers within the United States, and instructing and encouraging such businesses and consumers to use the Accused Google Assistant Products and Services in the ordinary, customary, and intended way, which Google/Alphabet knew infringes at least Claim 1 of the '652 Patent, or, alternatively, was willfully blind to the infringement.

284. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) further include, without limitation and with specific intent to encourage the infringement, knowingly inducing Google/Alphabet's customers to commit acts of infringement with respect to the Accused Google Assistant Products and Services within the United States, by, directly or through intermediaries, instructing and encouraging such customers to import, make, use, sell, offer to sell, or otherwise commit acts of infringement with respect to the Accused Google Assistant Products and Services in the United States, which Google/Alphabet knew infringes at least Claim 1 of the '652 Patent, or, alternatively, was willfully blind to the infringement.

285. On information and belief, in violation of 35 U.S.C. § 271(c), Google/Alphabet's contributory infringement further includes offering to sell or selling within the United States, or importing into the United States, components of the patented invention of and/or a material or apparatus for use in practicing at least Claim 1 of the '652 Patent, constituting a material part of the invention. On information and belief, Google/Alphabet knows and has known the same to be especially made or especially adapted for use in an infringement of the '652 Patent, and such components are not a staple article or commodity of commerce suitable for substantial noninfringing use.

286. On information and belief, in violation of 35 U.S.C. § 271(f)(1), Google/Alphabet's infringement further includes without authority supplying or causing to be supplied in or from the United States all or a substantial portion of the components of the patented invention of at least Claim 1 of the '652 Patent, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States.

287. On information and belief, in violation of 35 U.S.C. § 271(f)(2), Google/Alphabet's infringement further includes without authority supplying or causing to be supplied in or from the United States components of the patented invention of at least Claim 1 of the '652 Patent that are especially made or especially adapted for use in the invention and not staple articles or commodities of commerce suitable for substantial noninfringing use, where such components are uncombined in whole or in part, knowing that such components are so made or adapted and intending that such components will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States.

288. Google/Alphabet is not licensed or otherwise authorized to practice the claims of the '652 Patent.

289. Thus, by its acts, Google/Alphabet has injured Dialect and is liable to Dialect for directly and/or indirectly infringing one or more claims of the '652 Patent, whether literally or under the doctrine of equivalents, including without limitation Claim 1.

290. As a result of Google/Alphabet's infringement of the '652 Patent, Dialect has suffered monetary damages, and seeks recovery, in an amount to be proven at trial, adequate to compensate for Google/Alphabet's infringement, but in no event less than a reasonable royalty with interest and costs.

291. On information and belief, in addition to Google/Alphabet's knowledge of the '652 Patent as set forth above both prior to and as a result of the filing of this Complaint, Google/Alphabet has had, and continues to have, the specific intent to infringe, through its deliberate and intentional infringement or, alternatively, through its willfully blind disregard of the '652 Patent by knowing there was a high probability of infringement but taking deliberate actions to avoid confirming that infringement. The filing of this action has also made Google/Alphabet aware of the unjustifiably high risk that its actions constituted and continue to constitute infringement of the '652 Patent. On information and belief, discovery will reveal additional facts and circumstances from which Google/Alphabet's knowledge and intent to infringe (or willful indifference), both before and after the filing of this action, may be inferred.

292. Accordingly, Google/Alphabet's infringement of the '652 Patent has also been and continues to be deliberate, intentional, and willful, and this is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees and costs pursuant to 35 U.S.C. §§ 284 and 285.

293. Google/Alphabet's infringement of Dialect's rights under the '652 Patent will continue to damage Dialect, causing irreparable harm for which there is no adequate remedy at law, unless enjoined by this Court.

EIGHTH COUNT
(Infringement of U.S Patent No. 9,031,845)

294. Dialect incorporates by reference the allegations set forth in Paragraphs 1–293 as though fully set forth herein.

295. The claims of the '845 Patent are valid and enforceable.

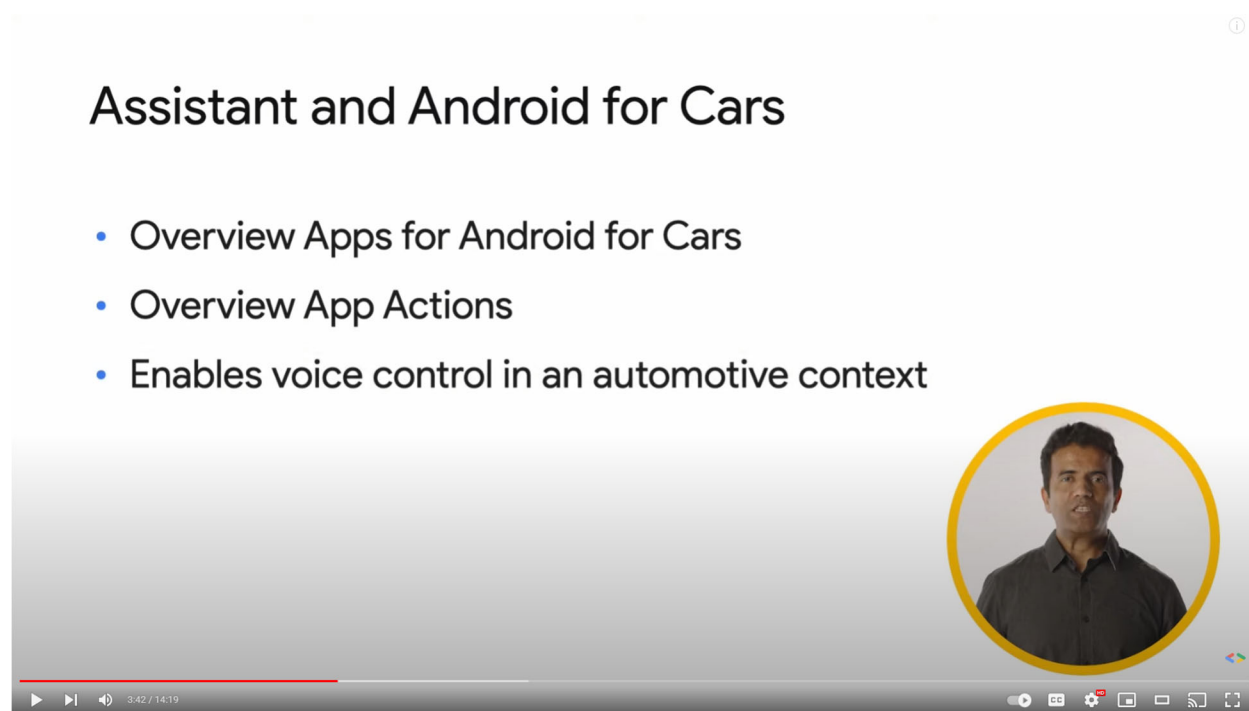
296. The claims of the '845 Patent are directed to patentable subject matter. Particularly, the '845 Patent is directed to a novel, tangible voice recognition system. The inventive, tangible claimed structures of the '845 Patent improve on the natural language processing of a natural language utterance by a user. The claimed inventions provide specific concrete solutions to the problem of speech recognition in existing systems.

297. In violation of 35 U.S.C. § 271(a) and without authority from Plaintiff, Google/Alphabet has directly infringed by making, using, offering for sale, selling, and/or importing into the state of Delaware, this judicial district, and elsewhere in the United States products and services that embody the invention disclosed and claimed in the '845 Patent, including at least the Accused Automotive Products and Services.

298. Each of the Accused Automotive Products and Services contains elements that are identical or equivalent to each claimed element of the patented invention pointed out by at least Claim 1 of the '845 Patent.

299. Each of the Accused Automotive Products and Services comprises a mobile system for processing natural language utterances.

300. For example, Google describes how “Google Assistant enhances the Android for Cars experience with voicified apps.”⁸⁶



Google further describes Google Assistant as responding to a user generated natural language speech utterance.⁸⁷

⁸⁶ <https://www.youtube.com/watch?v=MI40lmJmp7w>

⁸⁷ <https://support.google.com/assistant/answer/7172842?hl=en>

What you can ask Google Assistant

You can ask Google Assistant for info and for help with everyday tasks.

Important: Some queries won't work on all devices and in all languages.

For ideas about what Google Assistant can help with, ask "What can you do?"

What Google Assistant can do

Get local info

- **Weather:** What's the weather today?
- **Food:** Find pizza restaurants nearby.
- **Business hours:** Is Walgreens still open?
- **Navigation:** Navigate home.

Plan your day

- **Traffic:** How's the traffic to work?
- **Reminders:** Remind me to do laundry this evening. Remind me to call Mom every Sunday.
- **Calendar events:** When's my first meeting today? Add a meeting to my calendar.
- **Flights:** Is United flight 1463 on time?

Ask Google

- **Game updates:** Who won the Warriors game?
- **Calculations:** What's 20% of 80?
- **Dictionary:** What does "gregarious" mean?
- **Translations:** How do I say "Nice to meet you" in French?
- **Finance:** How's the S&P 500 doing?
- **Unit conversions:** How many kilometers in a mile?
- **Search:** Search for summer vacation ideas.
- **Image search:** Find pictures of kittens.
- **Web answer:** How do you remove wine stains from a rug?

Google further describes that Google Assistant App Actions are integrated with Android for Cars.⁸⁸

Integrate with Google Assistant using App Actions

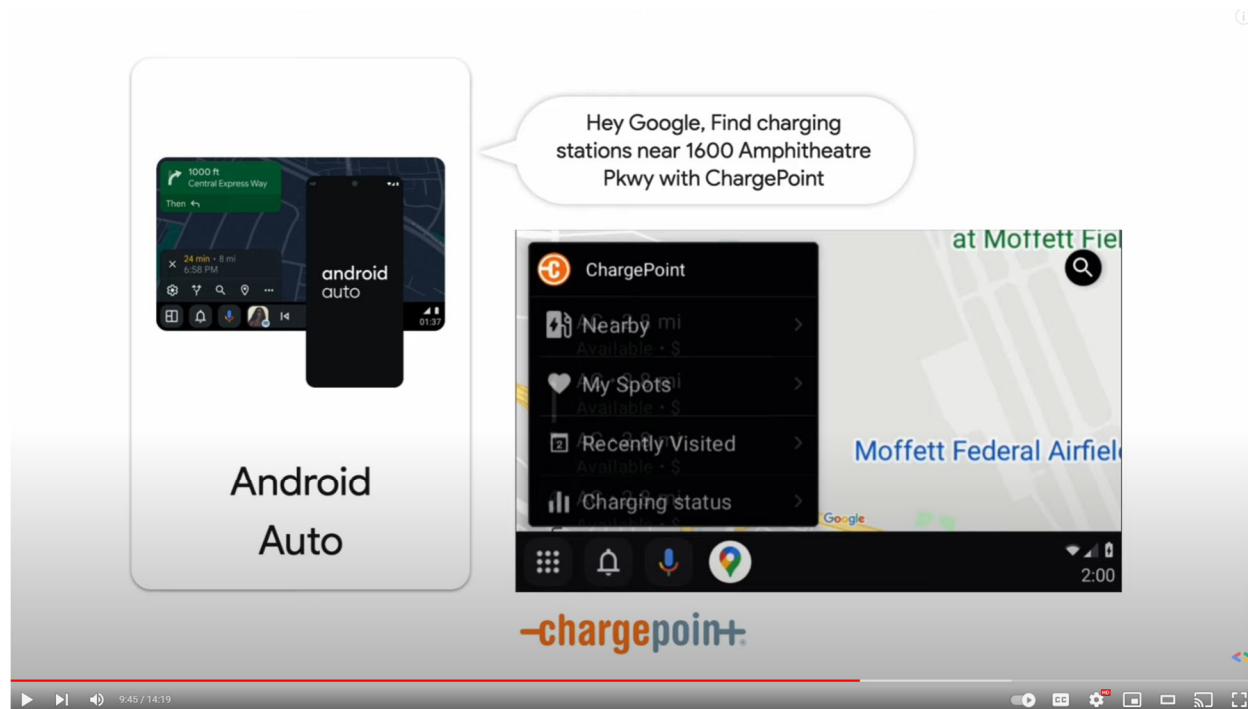
Voice-enable your POI app using Assistant to allow users to search for points of interest by asking things like, "Hey Google, find nearby charging stations on ExampleApp". For detailed instructions, see [App Actions for Cars](#).

301. Each of the Accused Automotive Products and Services comprises one or more physical processors at a vehicle that are programmed to execute one or more computer program

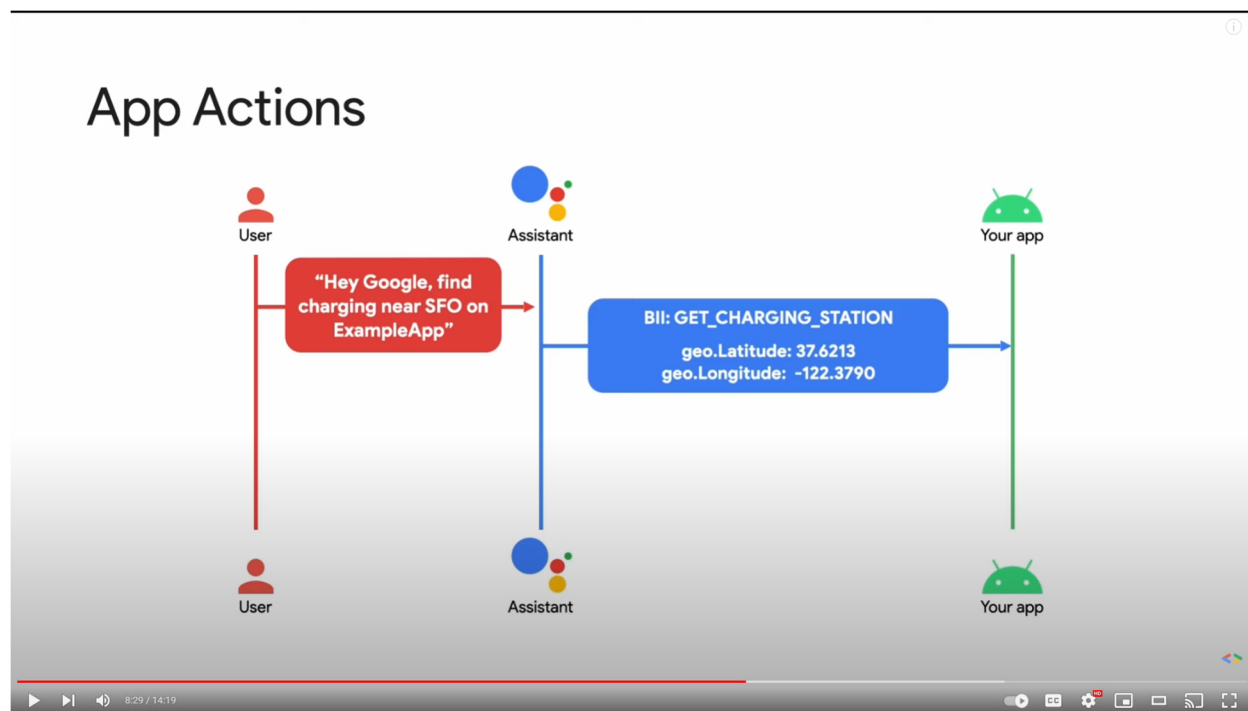
⁸⁸ <https://developer.android.com/training/cars/apps/poi>

instructions which, when executed, cause the one or more physical processors to: receive a natural language utterance associated with a user.

302. For example, Google describes how Google Assistant with Android for Cars, which runs on one or more physical processors at a vehicle, receives user requests.⁸⁹



⁸⁹ <https://www.youtube.com/watch?v=MI40lmJmp7w>



303. Each of the Accused Automotive Products and Services comprises performing speech recognition on the natural language utterance.

304. For example, Google states that its Assistant “gets text out” of the question and identifies “the semantics, i.e., the meaning, of your question” and then selects, for example, Google Maps.⁹⁰

⁹⁰ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

Got it. Let's say I ask Assistant something pretty straightforward, like, "Hey Google, where's the closest dog park?" – how would Assistant understand what I'm saying and respond to my query?

The first step is for Assistant to process that "Hey Google" and realize, "Ah, it looks like this person is now speaking to me and wants something from me."

Assistant picks up the rest of the audio, processes the question and gets text out of it. As it does that, it tries to understand what your sentence is about. What type of intention do you have?

To determine this, Assistant will parse the text of your question with another neural network that tries to identify the semantics, i.e. the meaning, of your question.

In this case, it will figure out that it's a question it needs to search for – it's not you asking to turn on your lights or anything like that. And since this is a location-based question, if your settings allow it, Assistant can send the geographic data of your device to Google Maps to return the results of which dog park is near you.

Google further describes Google Assistant as processing "audio of someone speaking" and "turn it into text."⁹¹

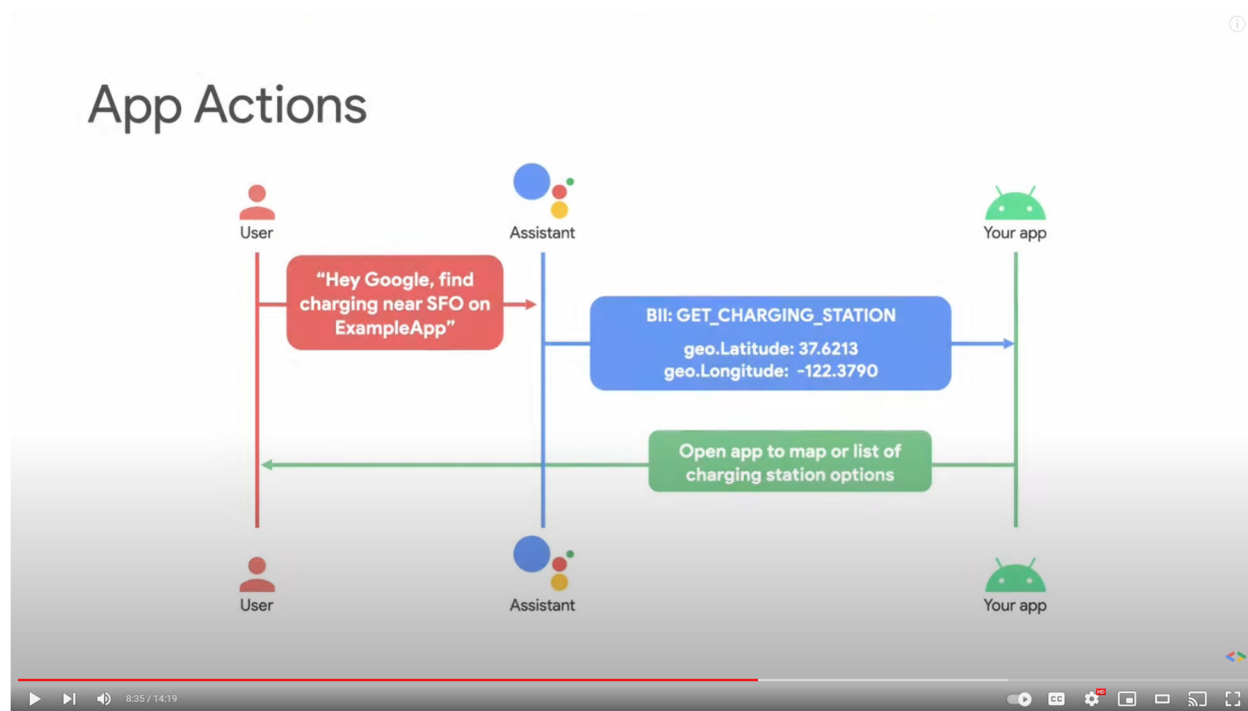
For Assistant, a deep neural network can receive an input, like the audio of someone speaking, and process that information across a stack of layers to turn it into text. This is what we call "speech recognition." Then, the text is processed by another stack of layers to parse it into pieces of information that help the Assistant understand what you need and help you by displaying a result or taking an action on your behalf. This is what we call "natural language processing."

305. Each of the Accused Automotive Products and Services comprises determining a domain and a context that are associated with the parsed and interpreted natural language utterance.

306. For example, Google describes how Google Assistant with Android for Cars processes the received request to determine the appropriate software module or modules for the request and communicates the parameters for that request to the appropriate module or modules, which then responds to the query.⁹²

⁹¹ <https://blog.google/products/assistant/ask-a-techspert-assistant-questions/>

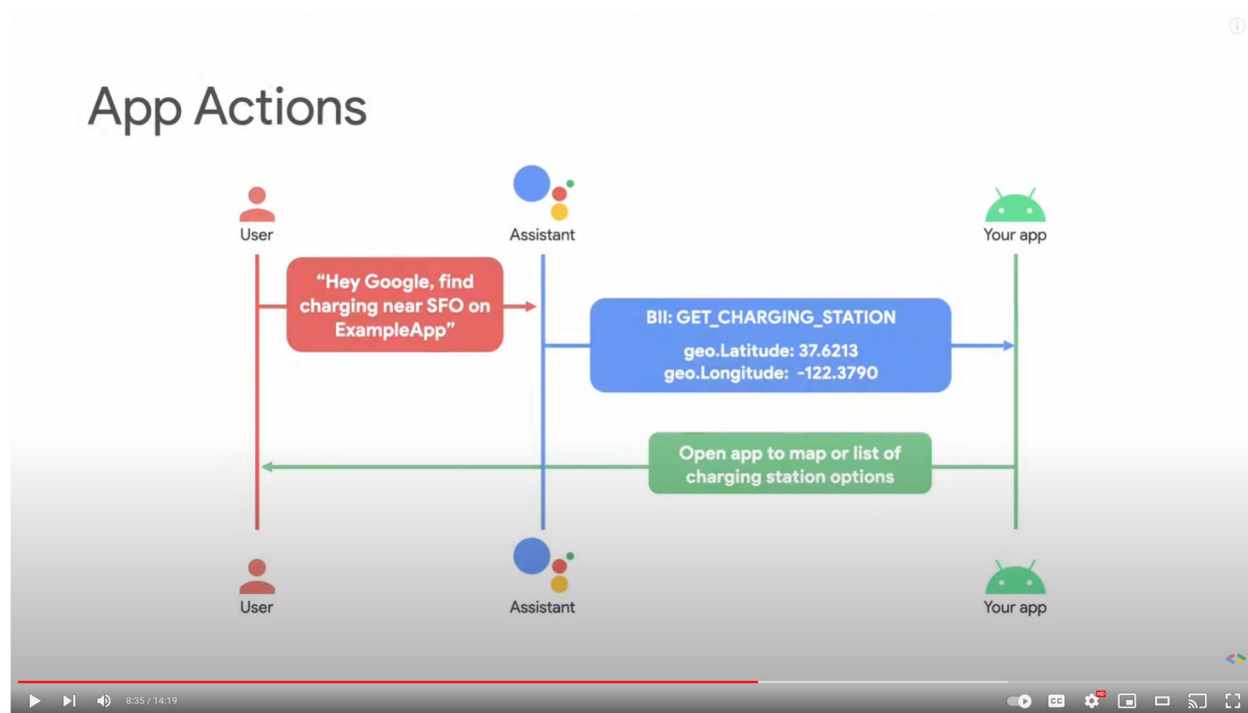
⁹² <https://www.youtube.com/watch?v=MI40lmJmp7w>



307. Each of the Accused Automotive Products and Services comprises formulating a command or query based on the domain and the context.

308. For example, Google describes how Google Assistant with Android for Cars interprets the request to formulate the command or query based on the appropriate module or modules. For example, it selects ExampleApp, based on the user's request to "find charging near SFO on ExampleApp." It then transforms the request by providing the BII information based on the recognized word SFO into a command formulated in the structure required by ExampleApp.⁹³

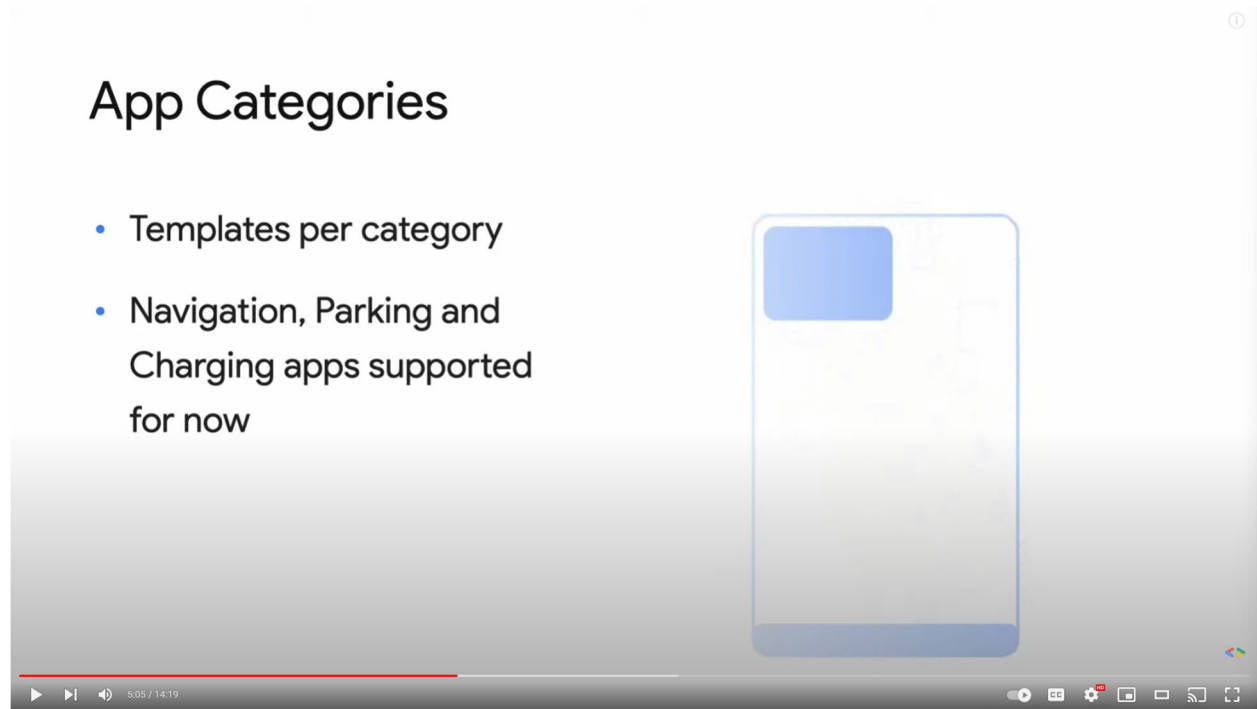
⁹³ <https://www.youtube.com/watch?v=MI40lmJmp7w>



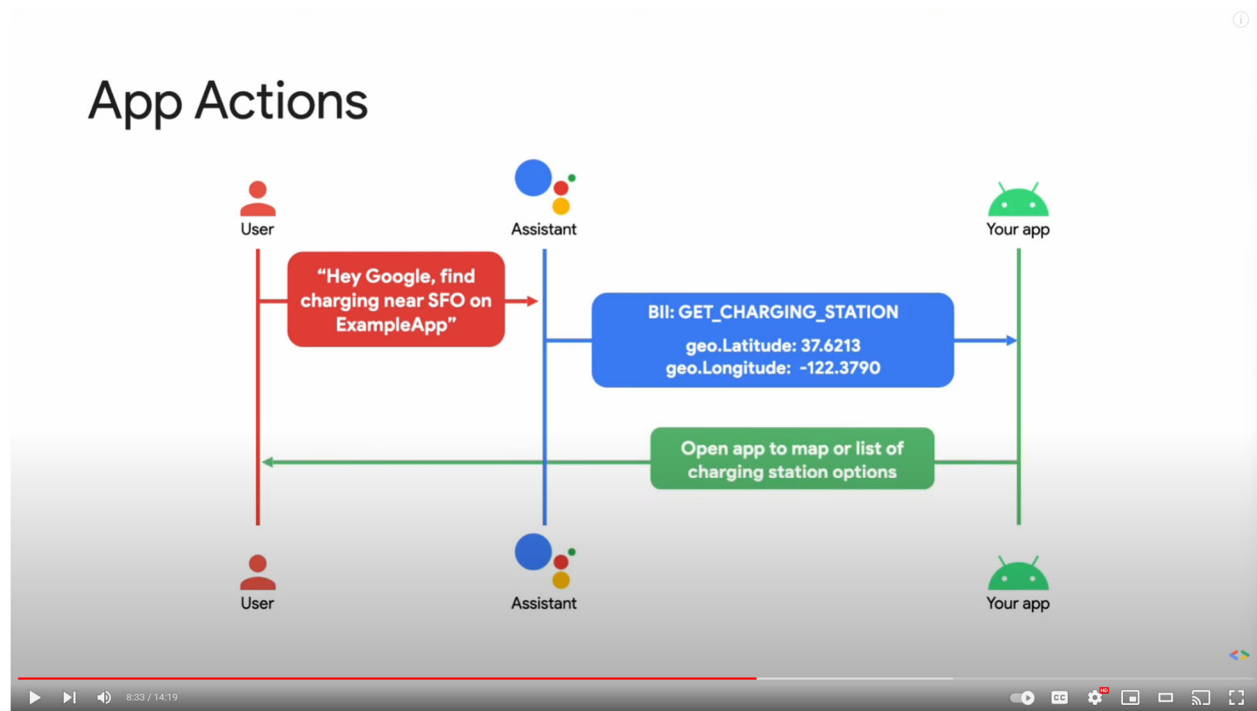
309. Each of the Accused Automotive Products and Services comprises determining whether the command or query is to be executed on-board or off-board the vehicle.

310. For example, Google describes how Google Assistant with Android for Cars supports a Car App Library that includes categories for Navigation, Parking and Charging apps, in addition to media related software modules.⁹⁴

⁹⁴ <https://www.youtube.com/watch?v=MI40lmJmp7w>



Google further describes how a module can retrieve information from outside of the vehicle to return results to the user.⁹⁵



⁹⁵ <https://www.youtube.com/watch?v=MI40lmJmp7w>

311. Each of the Accused Automotive Products and Services comprises executing the command or query at the vehicle in response to a determination that the command or query is to be executed on-board the vehicle.

312. For example, Google describes to developers how Android for Auto media playback apps can execute voice commands on-board the vehicle.⁹⁶

Display browsable search results

Your app can provide contextual search results that display to users when they initiate a search query. Android Auto and Android Automotive OS show these results through search query interfaces or through affordances that pivot on queries made earlier in the session. To learn more, see the [Support voice actions](#) section in this guide.

To display browsable search results, include the constant key

`BROWSER_SERVICE_EXTRAS_KEY_SEARCH_SUPPORTED` in the extras bundle of your service's `onGetRoot()` method, mapping to the boolean `true`.

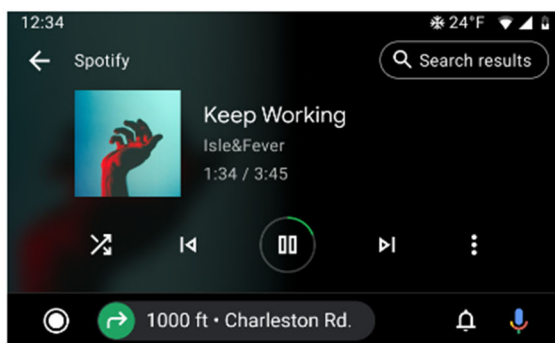


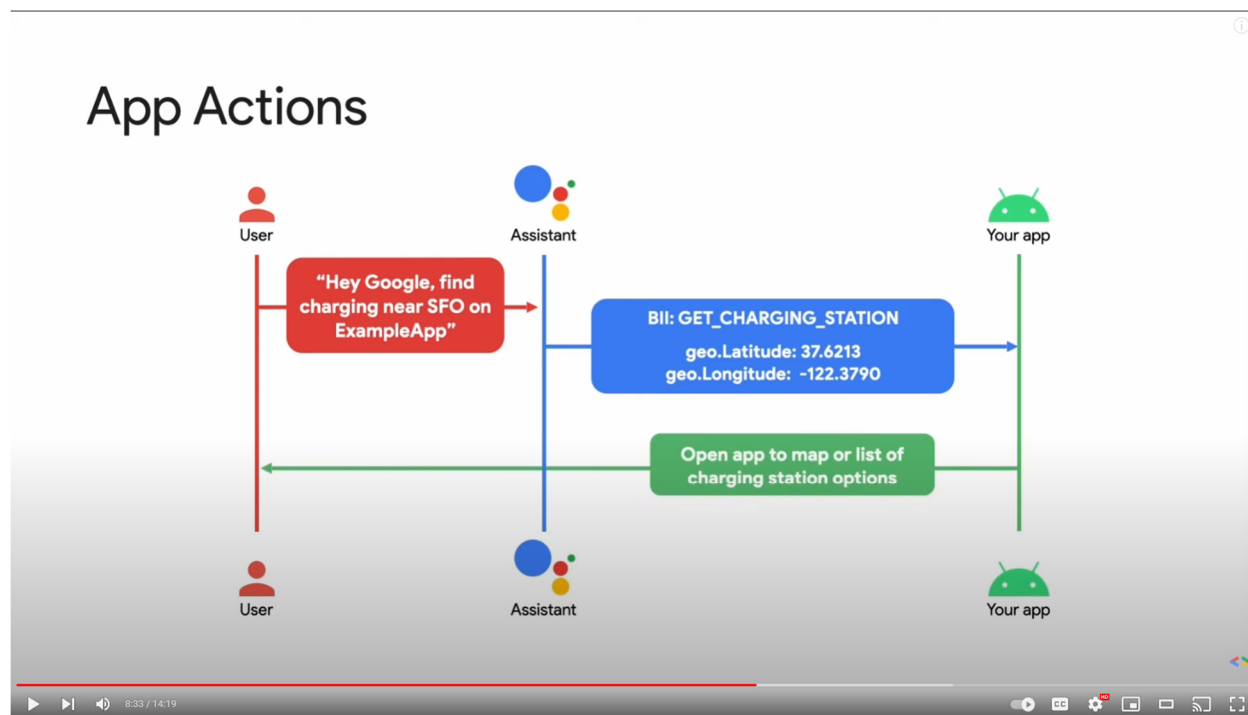
Figure 5. Playback view with a "Search results" option for viewing media items related to the user's voice search.

313. Each of the Accused Automotive Products and Services comprises invoking a device that communicates wirelessly over a wide area network to process the command or query such that the command or query is executed off-board the vehicle in response to a determination that the command or query is to be executed off-board the vehicle.

314. For example, Google describes how the ExampleApp connects to the internet to search for charging stations near SFO.⁹⁷

⁹⁶ <https://developer.android.com/training/cars/media>

⁹⁷ <https://www.youtube.com/watch?v=MI40lmJmp7w>



On information and belief, all Accused Automotive Products and Services comprise a wireless communication device to connect to a cellular and/or Wi-Fi network.

315. Google/Alphabet has long known about the '845 Patent.

316. On information and belief, Google/Alphabet actively monitors patent activity through information that is available to the public from the United States Patent and Trademark Office and from commercial and foreign government databases (including commercial databases operated by Google/Alphabet). For example, on or about February 2, 2012, the U.S. Patent Office identified the '720 Patent, to which the '845 Patent claims priority, to Google as prior art to Google's own United States patent application no. 12/692,307. On information and belief, Google/Alphabet thereafter monitored the prosecution of the application continuing from the '720 Patent, which led to the '845 Patent, and was aware of the '845 Patent at or soon after its issuance from the U.S. Patent Office.

317. Google/Alphabet knew or should have known that Google/Alphabet's actions infringe one or more of the claims of the '845 Patent because Google/Alphabet has the technical expertise to understand the scope and content of the '845 Patent, because Google/Alphabet is a major provider of voice recognition products and services, and because Google/Alphabet knows the design, function, and operation of the Accused Automotive Products and Services, as well as the nature and extent of their use by others. At a minimum, Google/Assistant has knowledge of the '845 Patent at least as of the filing of this Complaint.

318. Further, on information and belief, Google/Alphabet has actively induced and/or contributed to infringement of at least Claim 1 of the '845 Patent in violation of at least 35 U.S.C. § 271(b), (c), and (f).

319. Users of the Accused Automotive Products and Services directly infringe at least Claim 1 of the '845 Patent when they use the Accused Automotive Products and Services in the ordinary, customary, and intended way.

320. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) include, without limitation and with specific intent to encourage infringement, knowingly inducing businesses and consumers to use the Accused Automotive Products and Services within the United States in the ordinary, customary, and intended way by, directly or through intermediaries, supplying the Accused Automotive Products and Services to businesses and consumers within the United States, and instructing and encouraging such businesses and consumers to use the Accused Automotive Products and Services in the ordinary, customary, and intended way, which Google/Alphabet knew infringes at least Claim 1 of the '845 Patent, or, alternatively, was willfully blind to the infringement.

321. On information and belief, Google/Alphabet's inducements in violation of 35 U.S.C. § 271(b) further include, without limitation and with specific intent to encourage the infringement, knowingly inducing Google/Alphabet's customers to commit acts of infringement with respect to the Accused Automotive Products and Services within the United States, by, directly or through intermediaries, instructing and encouraging such customers to import, make, use, sell, offer to sell, or otherwise commit acts of infringement with respect to the Accused Automotive Products and Services in the United States, which Google/Alphabet knew infringes at least Claim 1 of the '845 Patent, or, alternatively, was willfully blind to the infringement.

322. On information and belief, in violation of 35 U.S.C. § 271(c), Google/Alphabet's contributory infringement further includes offering to sell or selling within the United States, or importing into the United States, components of the patented invention of and/or a material or apparatus for use in practicing at least Claim 1 of the '845 Patent, constituting a material part of the invention. On information and belief, Google/Alphabet knows and has known the same to be especially made or especially adapted for use in an infringement of the '845 Patent, and such components are not a staple article or commodity of commerce suitable for substantial noninfringing use.

323. On information and belief, in violation of 35 U.S.C. § 271(f)(1), Google/Alphabet's infringement further includes without authority supplying or causing to be supplied in or from the United States all or a substantial portion of the components of the patented invention of at least Claim 1 of the '845 Patent, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States.

324. On information and belief, in violation of 35 U.S.C. § 271(f)(2), Google/Alphabet's infringement further includes without authority supplying or causing to be supplied in or from the United States components of the patented invention of at least Claim 1 of the '845 Patent that are especially made or especially adapted for use in the invention and not staple articles or commodities of commerce suitable for substantial noninfringing use, where such components are uncombined in whole or in part, knowing that such components are so made or adapted and intending that such components will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States.

325. Google/Alphabet is not licensed or otherwise authorized to practice the claims of the '845 Patent.

326. Thus, by its acts, Google/Alphabet has injured Dialect and is liable to Dialect for directly and/or indirectly infringing one or more claims of the '845 Patent, whether literally or under the doctrine of equivalents, including without limitation Claim 1.

327. As a result of Google/Alphabet's infringement of the '845 Patent, Dialect has suffered monetary damages, and seeks recovery, in an amount to be proven at trial, adequate to compensate for Google/Alphabet's infringement, but in no event less than a reasonable royalty with interest and costs.

328. On information and belief, in addition to Google/Alphabet's knowledge of the '845 Patent as set forth above both prior to and as a result of the filing of this Complaint, Google/Alphabet has had, and continues to have, the specific intent to infringe, through its deliberate and intentional infringement or, alternatively, through its willfully blind disregard of the '845 Patent by knowing there was a high probability of infringement but taking deliberate actions to avoid confirming that infringement. The filing of this action has also made Google/Alphabet

aware of the unjustifiably high risk that its actions constituted and continue to constitute infringement of the '845 Patent. On information and belief, discovery will reveal additional facts and circumstances from which Google/Alphabet's knowledge and intent to infringe (or willful indifference), both before and after the filing of this action, may be inferred.

329. Accordingly, Google/Alphabet's infringement of the '845 Patent has also been and continues to be deliberate, intentional, and willful, and this is therefore an exceptional case warranting an award of enhanced damages and attorneys' fees and costs pursuant to 35 U.S.C. §§ 284 and 285.

330. Google/Alphabet's infringement of Dialect's rights under the '845 Patent will continue to damage Dialect, causing irreparable harm for which there is no adequate remedy at law, unless enjoined by this Court.

NOTICE

331. Plaintiff has complied with the notice requirement of 35 U.S.C. § 287 and has not and does not currently distribute, sell, offer for sale, or make products embodying the Asserted Patents.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for judgment and seeks relief from Defendants as follows:

- a. For judgment that Google/Alphabet has infringed and continues to infringe the claims of the '209, '738, '160, '720, '006, '607, '652, and '845 Patents;
- b. For a permanent injunction against Google/Alphabet and its respective officers, directors, agents, servants, affiliates, employees, divisions, branches, subsidiaries, parents, and all other acting in active concert therewith from infringement of the '209, '738, '160, '720, '006, '607, '652, and '845 Patents;

- c. For an accounting of all damages sustained by Plaintiff as a result of Google/Alphabet's acts of infringement;
- d. In the event Google/Alphabet is not permanently enjoined, for a mandatory future royalty payable on each and every future sale by Google/Alphabet of a product or service that is found to infringe one or more of the Asserted Patents and on all future products and services which are not colorably different from products and services found to infringe;
- e. For a judgment and order finding that Google/Alphabet's infringement is willful and/or egregious and awarding to Plaintiff enhanced damages pursuant to 35 U.S.C. § 284;
- f. For a judgment and order requiring Google/Alphabet to pay Plaintiff's damages, costs, expenses, and pre- and post-judgment interest for its infringement of the '209, '738, '160, '720, '006, '607, '652, and '845 Patents as provided under 35 U.S.C. § 284;
- g. For a judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to Plaintiff its reasonable attorneys' fees; and
- h. For such other and further relief in law and in equity as the Court may deem just and proper.

DEMAND FOR JURY TRIAL

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, Plaintiff demands a trial by jury in this action for all issues triable by a jury.

Dated: April 3, 2023

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Respectfully submitted,

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