Conversation AI:
The new User Experience

Google Cloud

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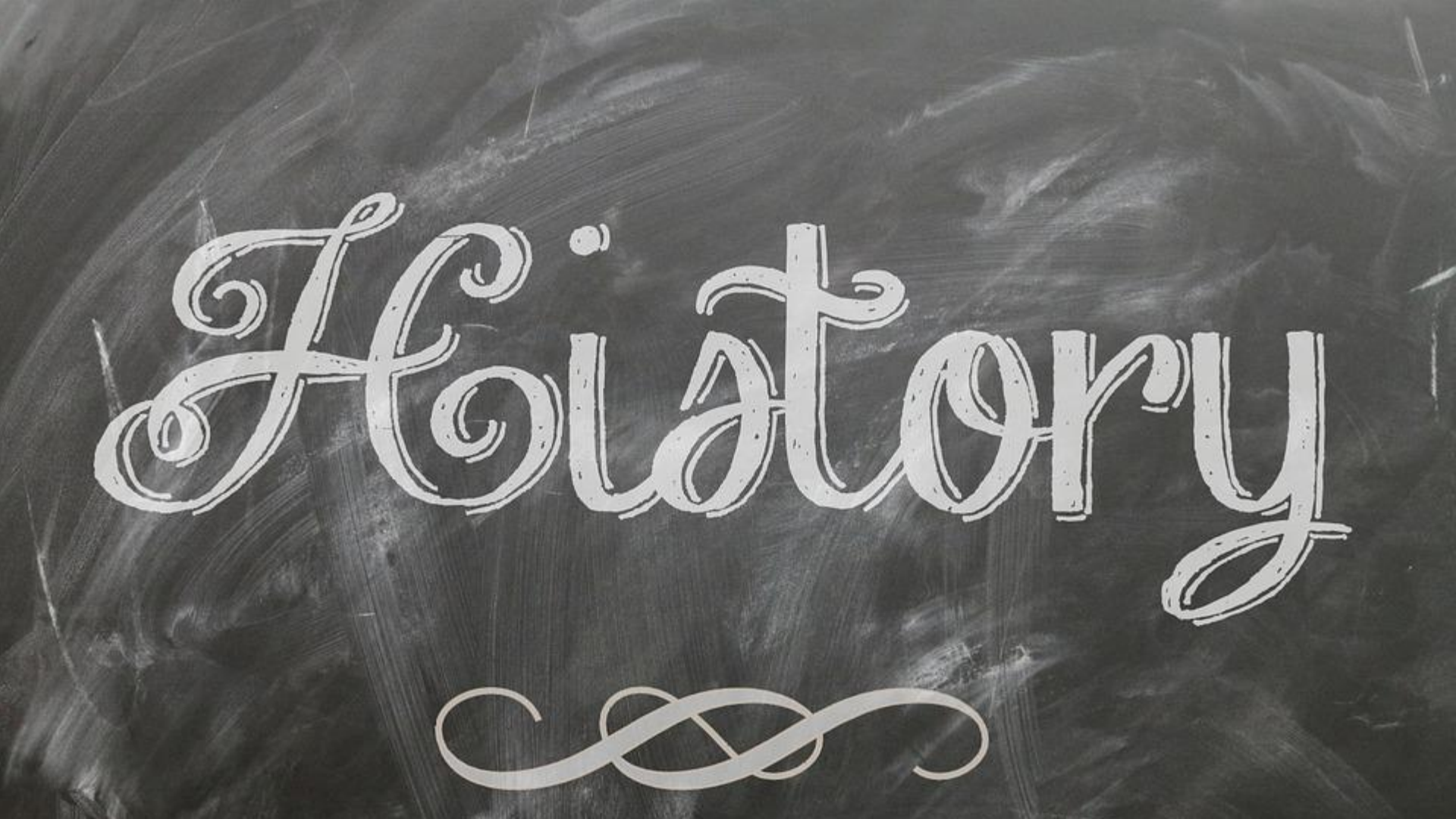
Google Cloud

@pvergadia


History

Why do conversational experiences fail?

According to https://chatbot.fail/ , there are 7 main drivers why chatbots fail to deliver delightful user experiences:

1. **Artificial Intelligence (AI) is still not that accessible**
2. **Use cases are not that strong**
3. **Some bots lack transparency**
4. **They don't understand context**
5. **They don't communicate with existing business systems**
6. **They try to handle too many things at once**
7. **They lack proper human escalation protocols**

Conversation is the new UI!

Google Cloud

IOT

Conversation is the new UI!

80%
of customer interactions can be resolved by **well-designed** bots

– **Accenture**

60%
of consumers want easier access to **self-serve solutions** for customer service

– **Ovum**

50%
of enterprises will **spend more on bots** than traditional mobile app dev by 2021

– **Gartner**

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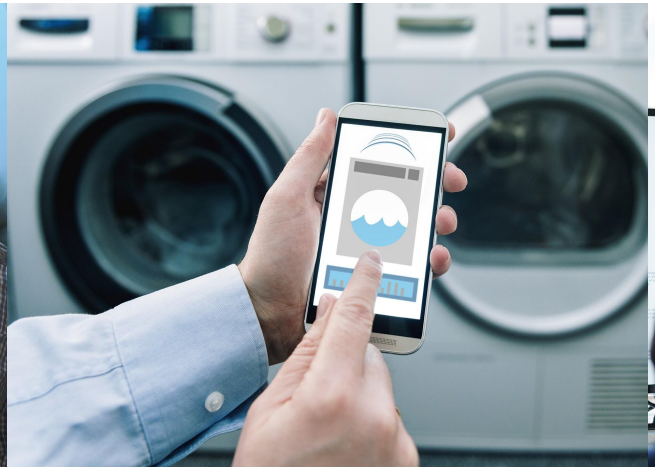
Use cases of Conversation AI and beyond

Connecting businesses with customers

- Customer service
- E-commerce



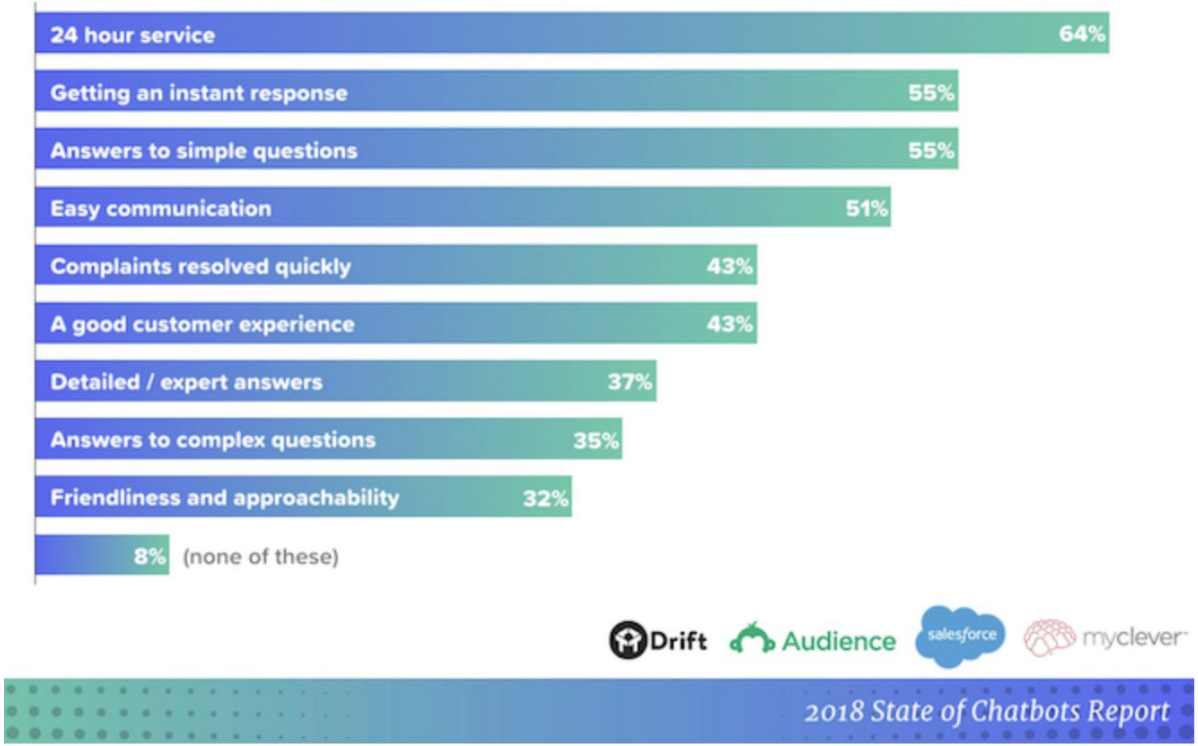
Controlling IoT devices

- Home entertainment
- Auto

Connecting businesses with employees

- Organizational knowledge
- Onboarding & Helpdesk

Consumers have high expectations

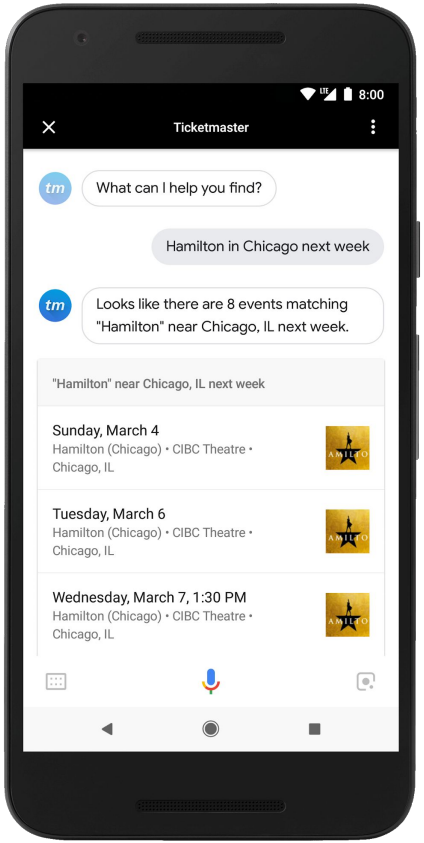


Based on data collected in Fall 2017 from sample of 1,051 U.S. adults, ages 18-64.

What is a “conversational experience”?

Any voice or chat interface that relies on Natural Language Understanding (NLU) for interacting with users -- not on static scripts or trees.

Synonyms:
Conversational interface, conversational UX, conversational app, voice bot, chat bot



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Technology behind Conversation AI

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NLU vs. NLP vs. ASR vs TTS

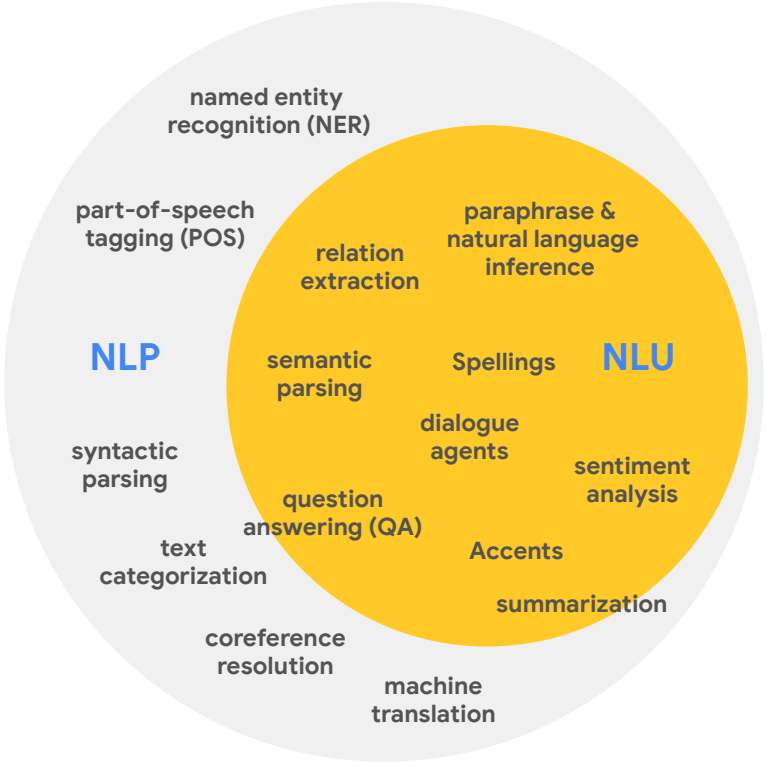
(NLP) Natural Language Processing

(NLU) Natural Language Understanding

(ASR) automatic speech recognition

(TTS) text-to-speech

(STT) speech-to-text



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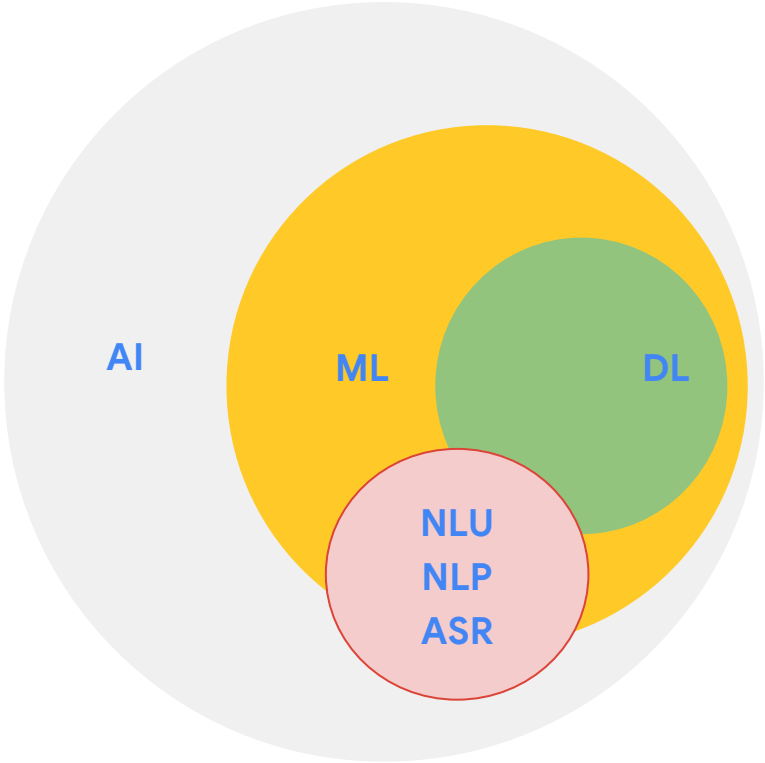

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What does it take to build a **GOOD** conversational experience?

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- ❖ Intents
- ❖ Utterances
- ❖ Entities
- ❖ Context

Intents

- The verbs in your dialog
- The action a user wants to take that they expect your chatbot to fulfill or facilitate
- Translated needs and wants
- How the application branches logic

I need my coffee
Intent: Get coffee

Tell me I'm pretty
Intent: Positive affirmation

My laptop is broken
Intent: Tech support

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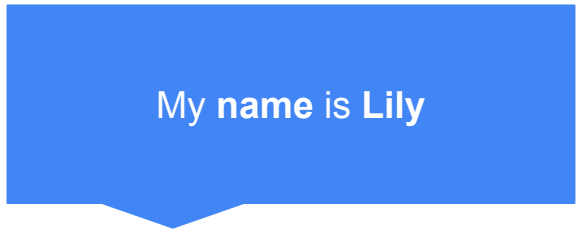
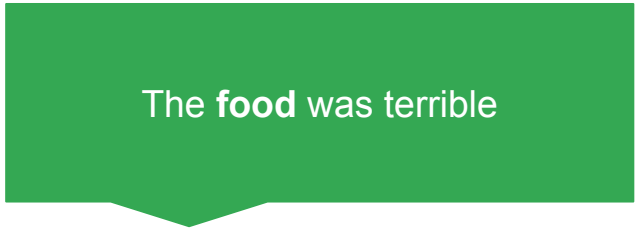
Entities

- The nouns in your dialog
- Composed of root terms and their synonyms
- Maps to variables
- Augmented by built-in entities





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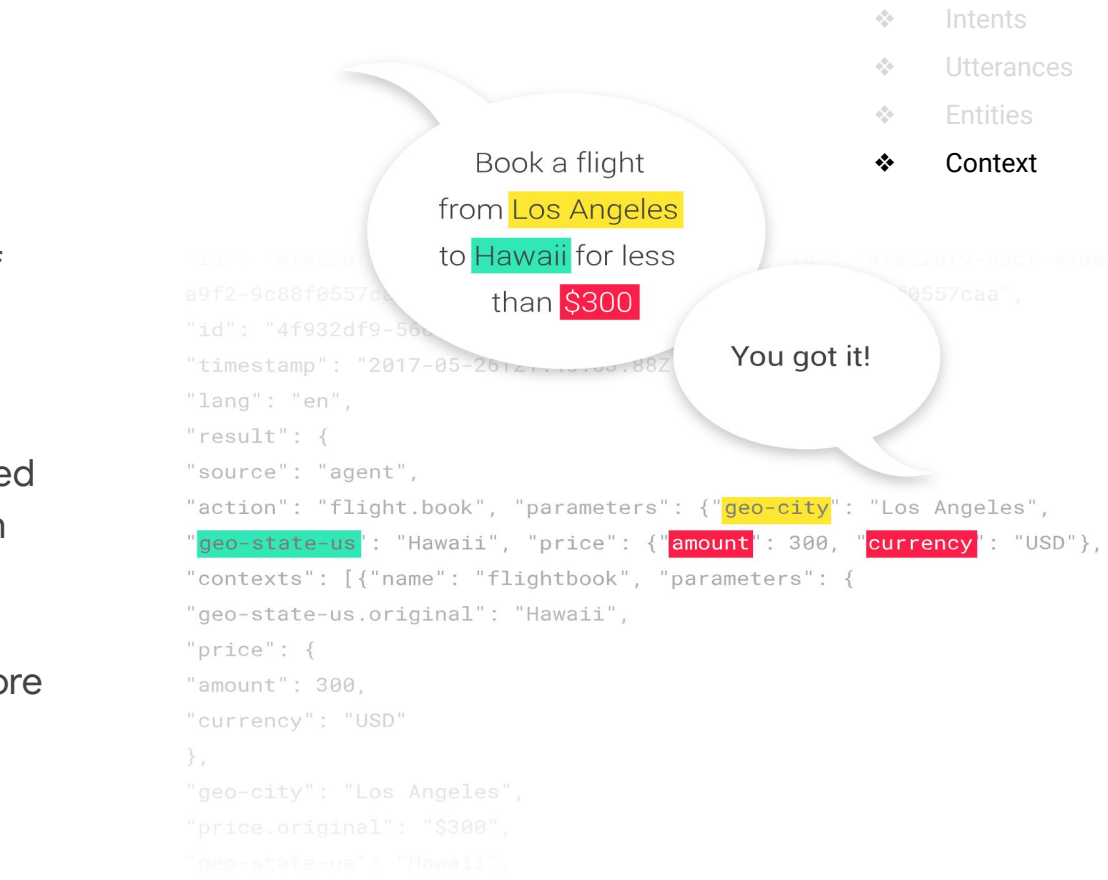
Context

- How the chatbot keeps track of where the user is at in the conversation
- The background history you need when entering a conversation in progress
- Method for an application to store and access variables



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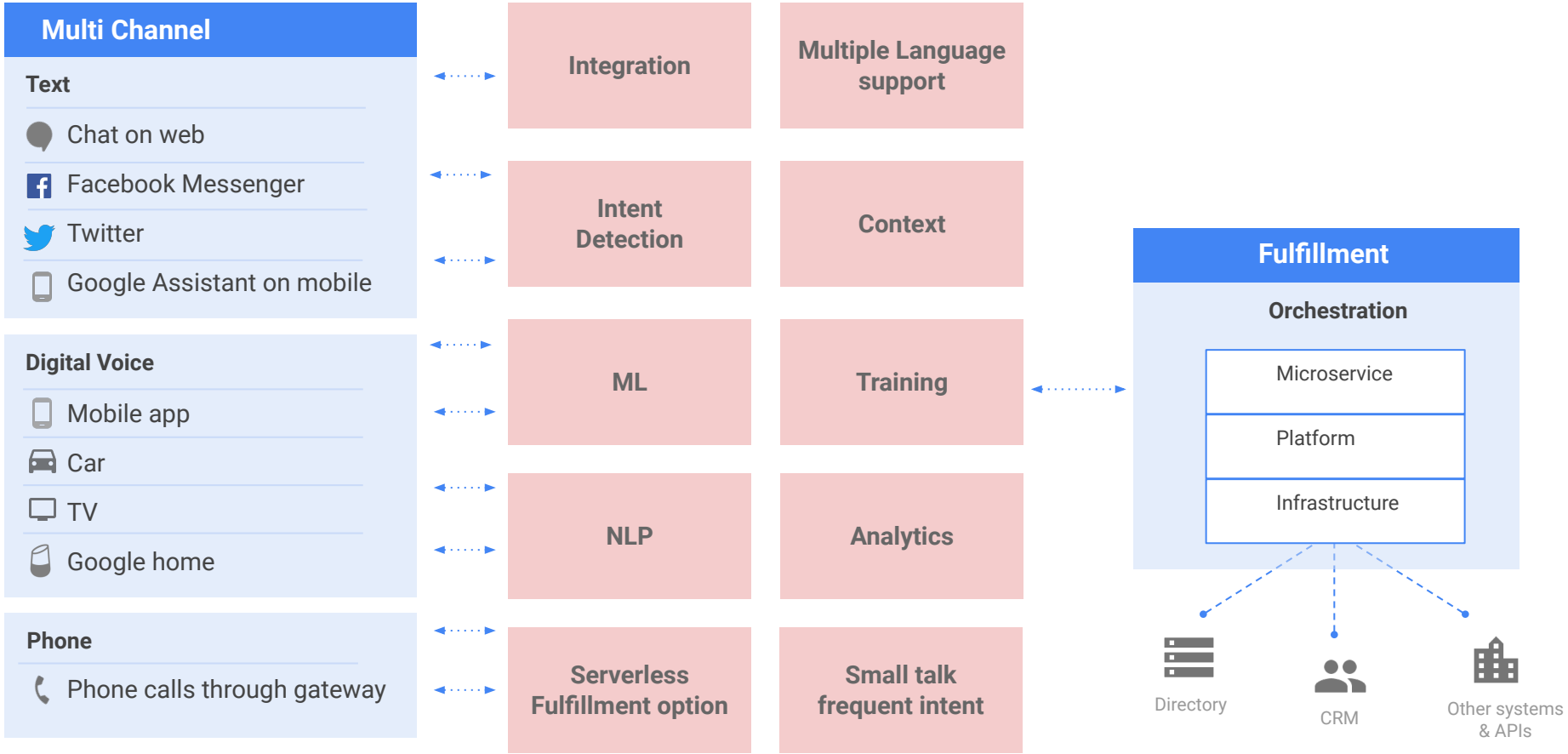

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Meeting expectations is hard without the right tools

NLU doesn't grow on trees!

Few companies have the expertise to do NLU as well as consumers expect

Maximizing reach takes effort

Building support for multiple languages, platforms, devices, and apps is complex

Enterprise integration is critical

Integration with backend services and websites requires open, flexible infrastructure

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Tools for Conversation AI

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Multi Channel

Text

- Chat on web
- Facebook Messenger
- Twitter
- Google Assistant on mobile

Digital Voice

- Mobile app
- Car
- TV
- Google home

Phone

- Phone calls through gateway

Conversation management

Dialogflow

Fulfillment

Google Cloud Orchestration

- Microservice — Cloud Function
- Platform — AppEngine
- Infrastructure — Compute Engine

Directory

CRM

Other systems & APIs

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What is Dialogflow?

- The emerging standard for building natural and rich conversational experiences for customer service and other applications across devices, websites, messaging platforms, and apps
- Powered by Google AI
- Built on Google Cloud Platform infrastructure, with Cloud Support and SLA available
- Multilingual and platform-agnostic: 20+ languages supported, 14 single-click integrations, and 7 SDKs

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Demo

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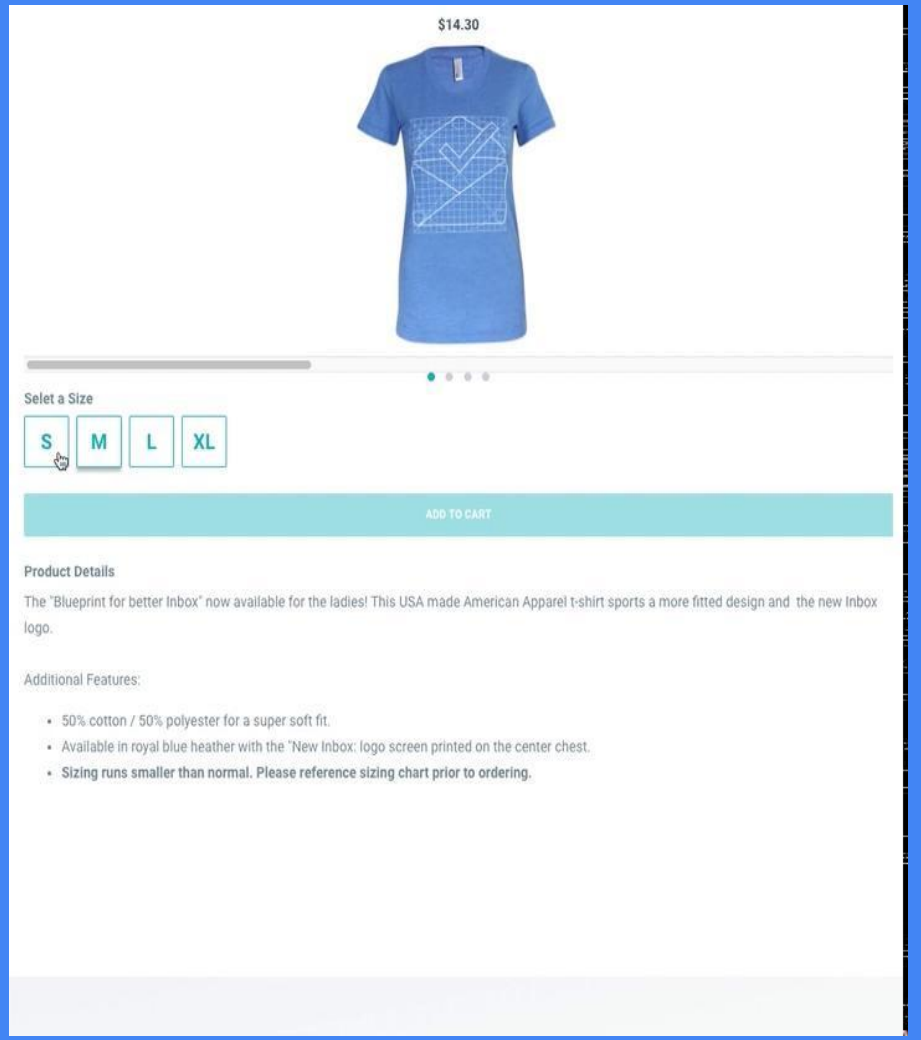
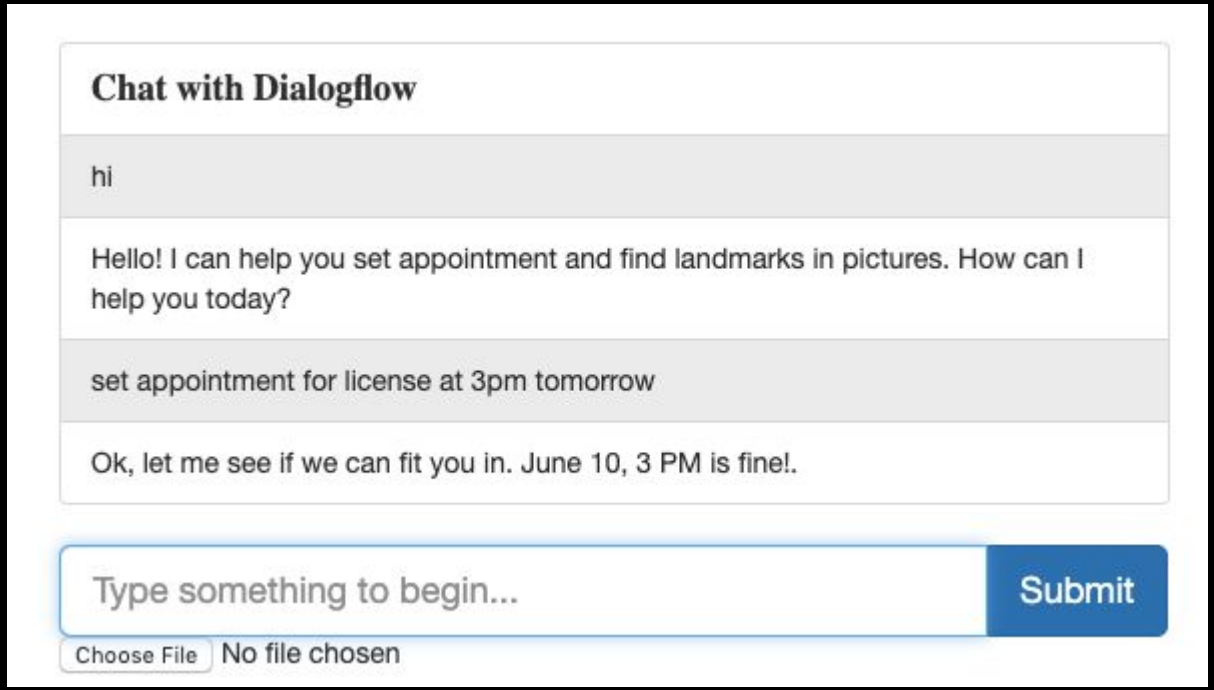
Retail Demo


$14.30
Selet a Size
S
M
L
XL
ADD TO CART
Product Details
The "Blueprint for better Inbox" now available for the ladies! This USA made American Apparel t-shirt sports a more fitted design and the new Inbox logo.
Additional Features:
50% cotton / 50% polyester for a super soft fit.
Available in royal blue heather with the "New Inbox: logo screen printed on the center chest.
Sizing runs smaller than normal. Please reference sizing chart prior to ordering.

Appointment Scheduler with Calendar integration



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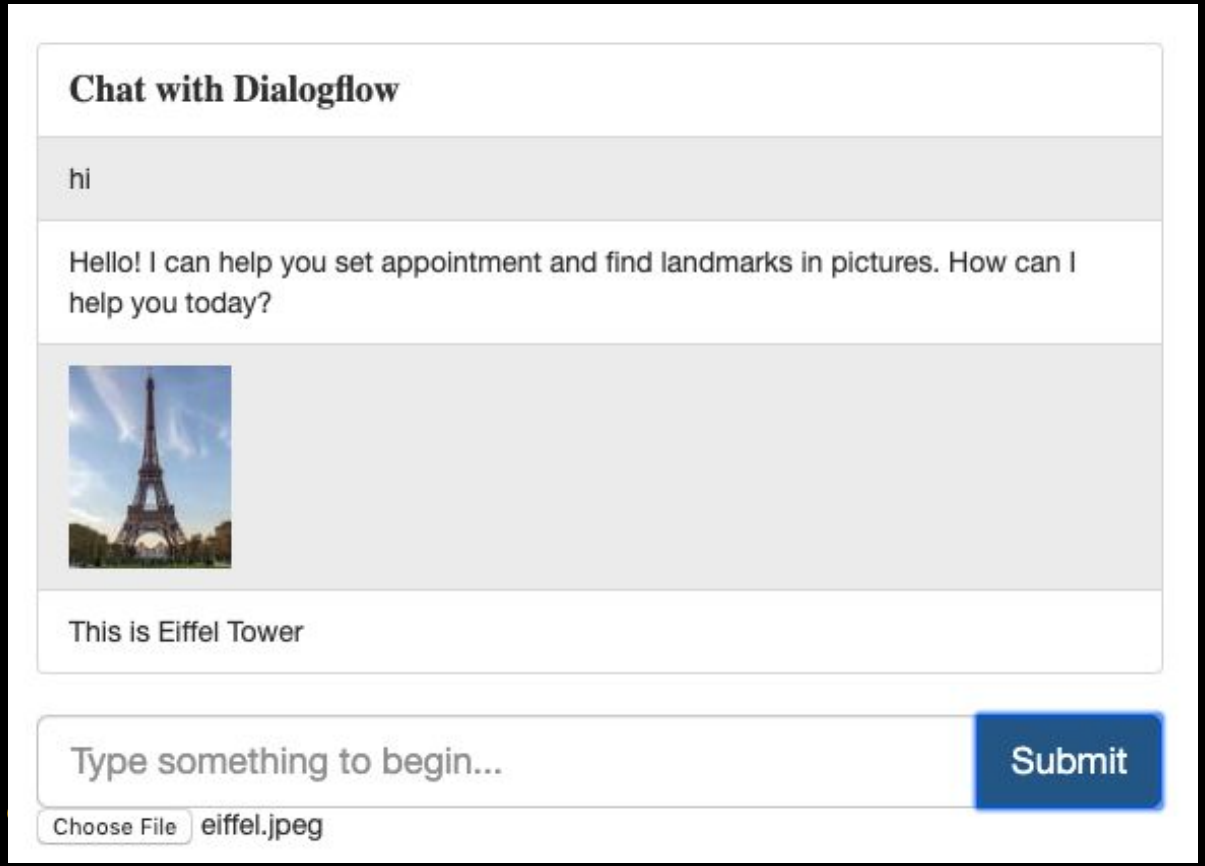
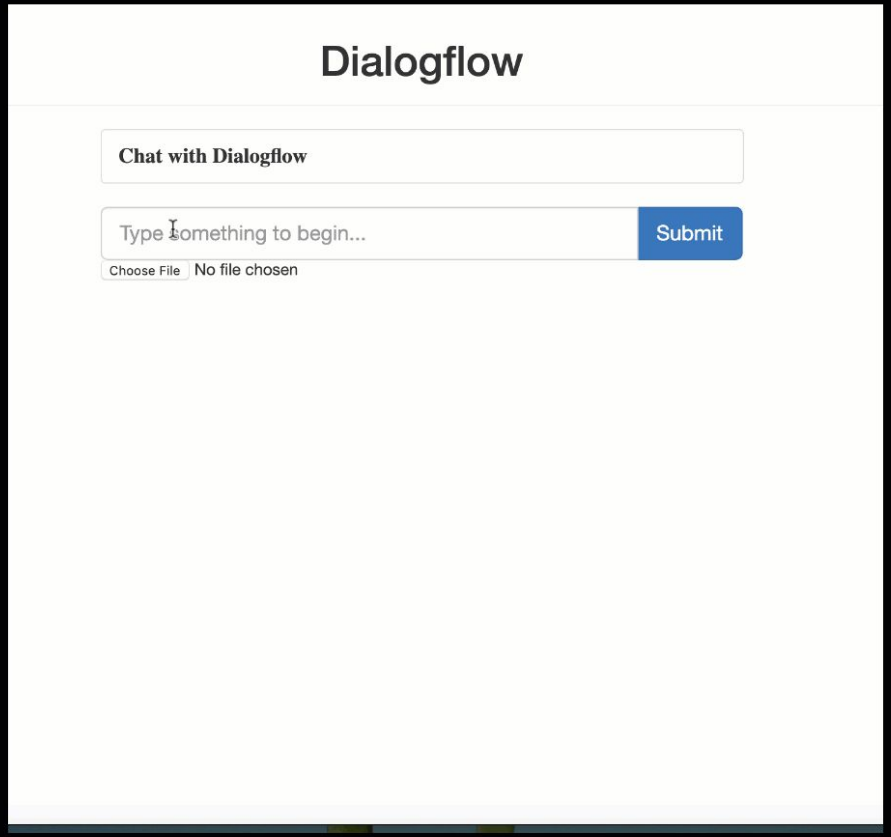
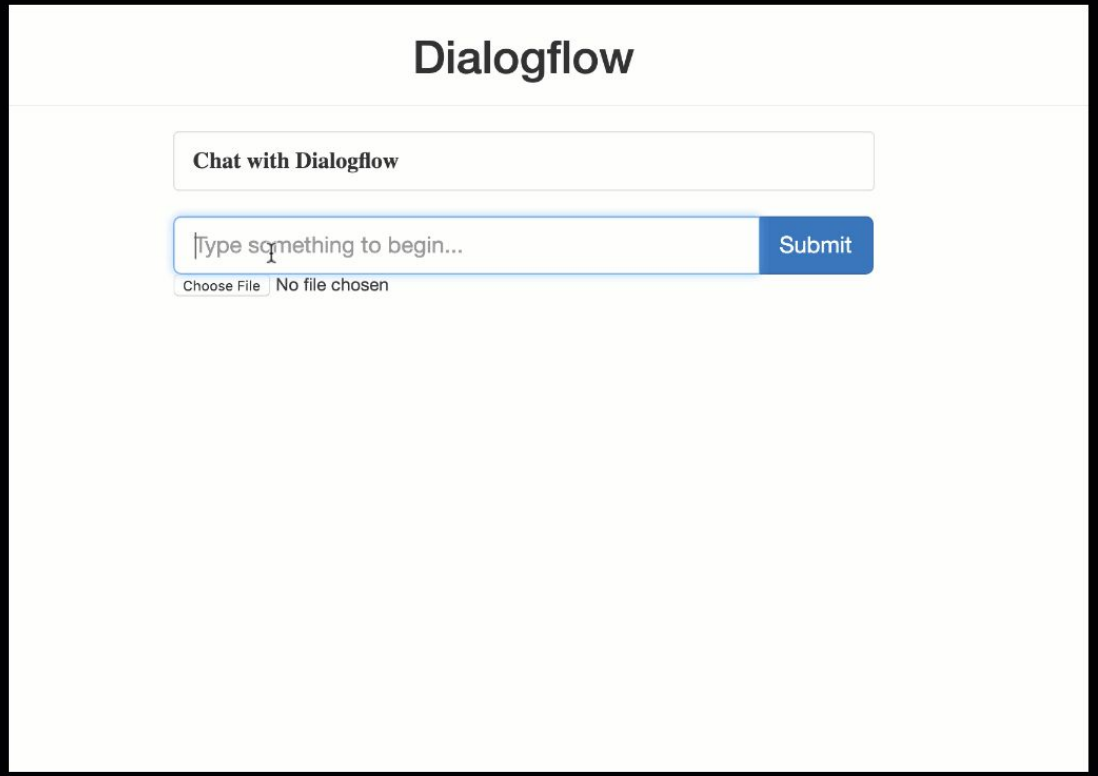
Chatbot integrated with Google Vision API



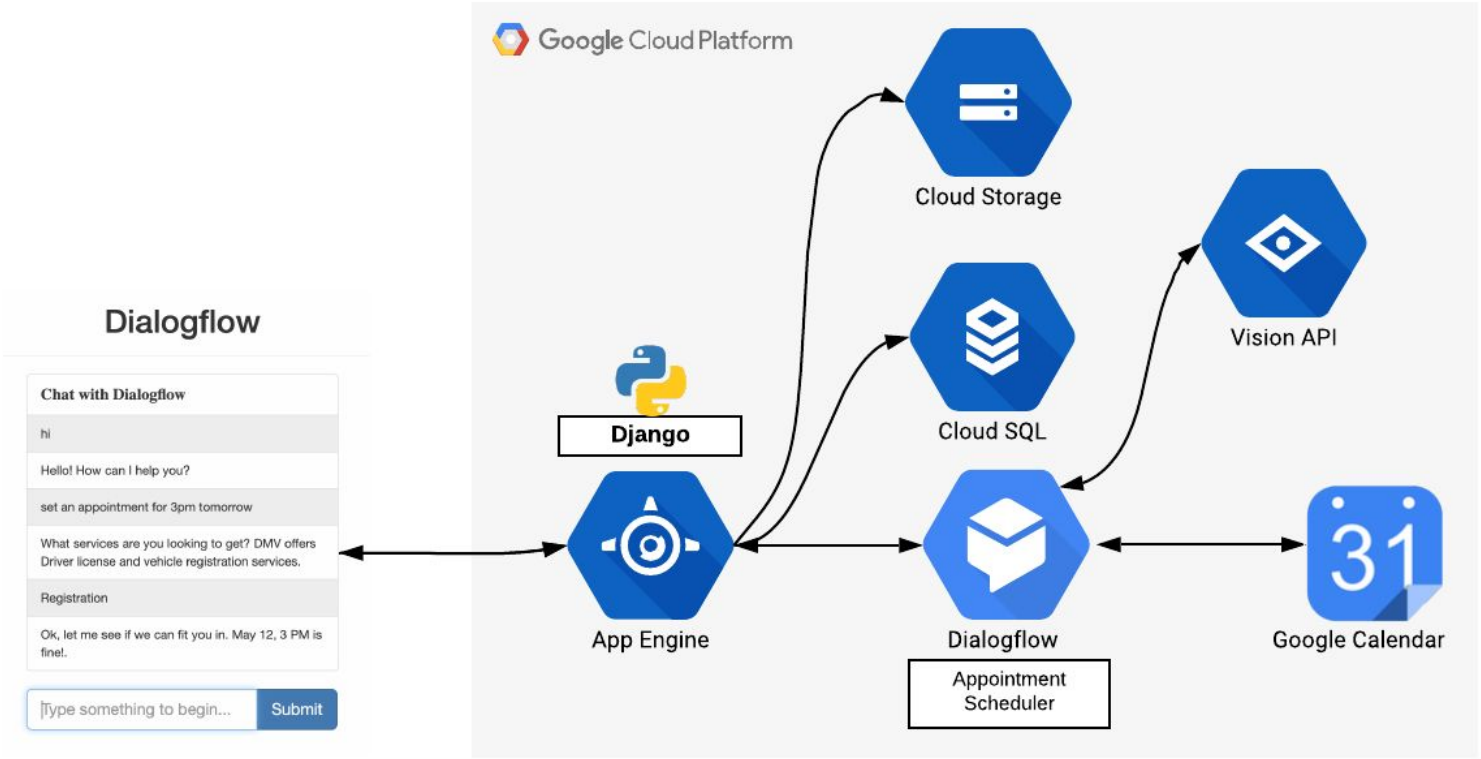
Appointment Scheduler with Calendar integration



Chatbot integrated with Google Vision API



What is happening behind the scenes



Dialogflow benefits for users

Build faster

Start training with only a few examples

40+ pre-built agents and “small talk” features

Go-to-market with a simple bots in hours

Engage more efficiently

Built-in, world-class natural language understanding

Multiple fulfillment options, including built-in code editor

Training and analytics across platforms

Maximize reach

Build once, deploy everywhere

20+ languages supported (most in product category)

14 single-click platform integrations & 7 SDKs

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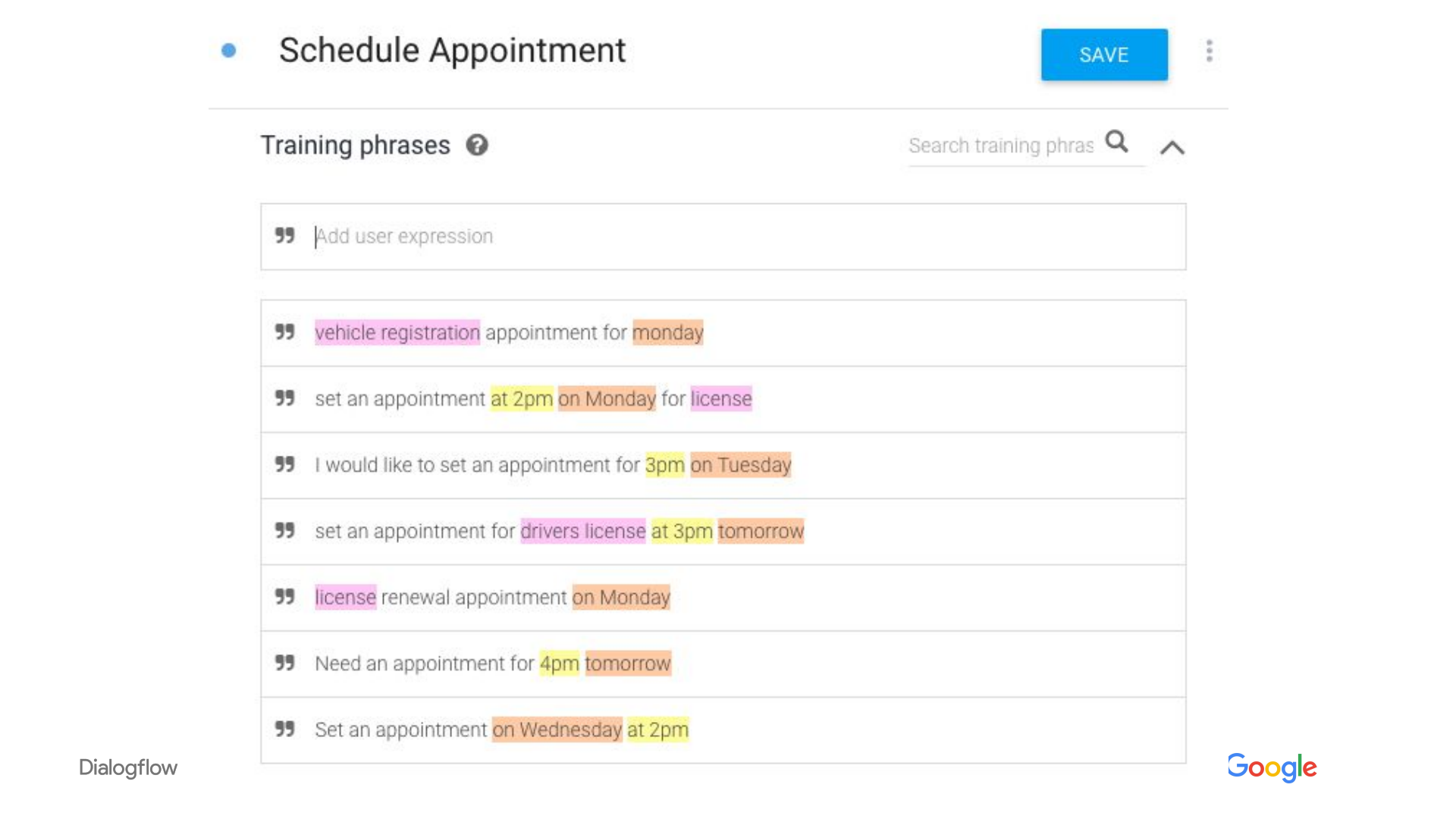
Intent Matching

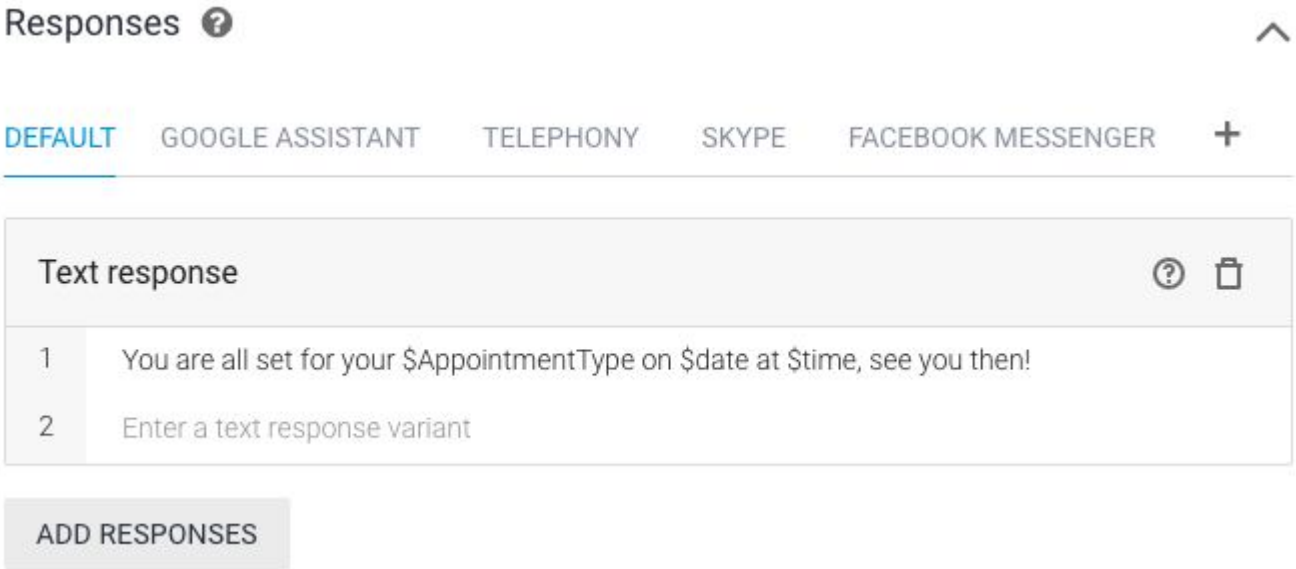
Recognizing what a user wants to do.


Schedule Appointment
SAVE
Training phrases
Search training phras
Add user expression
vehicle registration appointment for monday
set an appointment at 2pm on Monday for license
I would like to set an appointment for 3pm on Tuesday
set an appointment for drivers license at 3pm tomorrow
license renewal appointment on Monday
Need an appointment for 4pm tomorrow
Set an appointment on Wednesday at 2pm

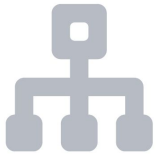
Response

Output automatically unless webhook intervenes

Embed entity values if desired



Google



Entity Extraction

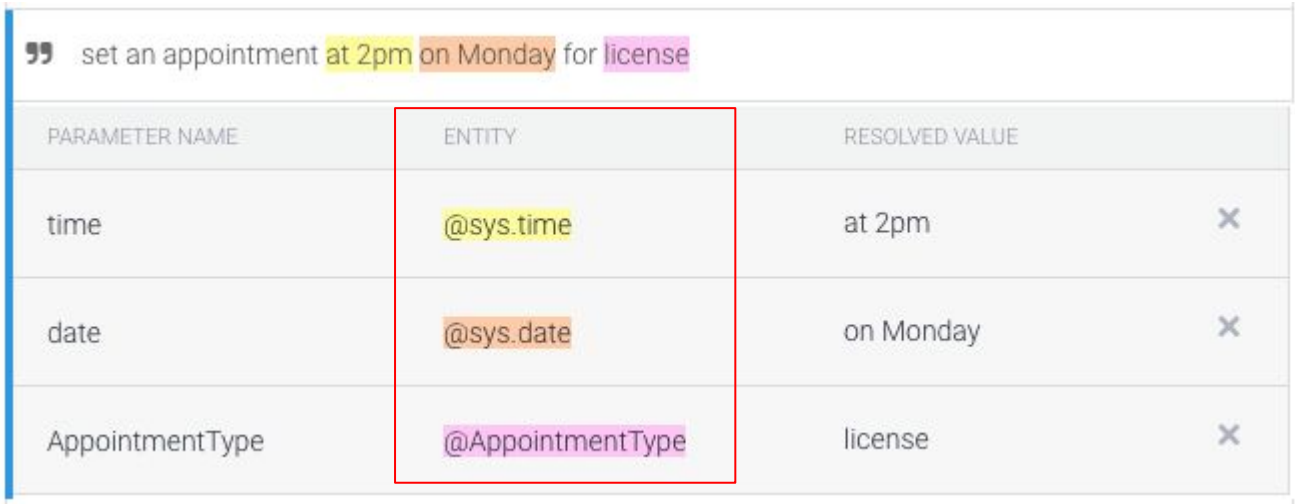
Identify key words and
phrases spoken by the user.

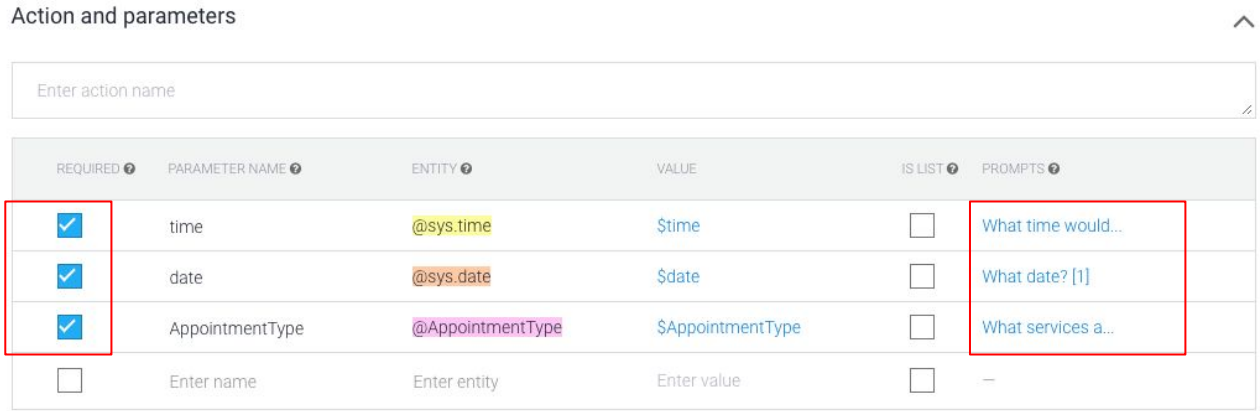
AppointmentType

SAVE

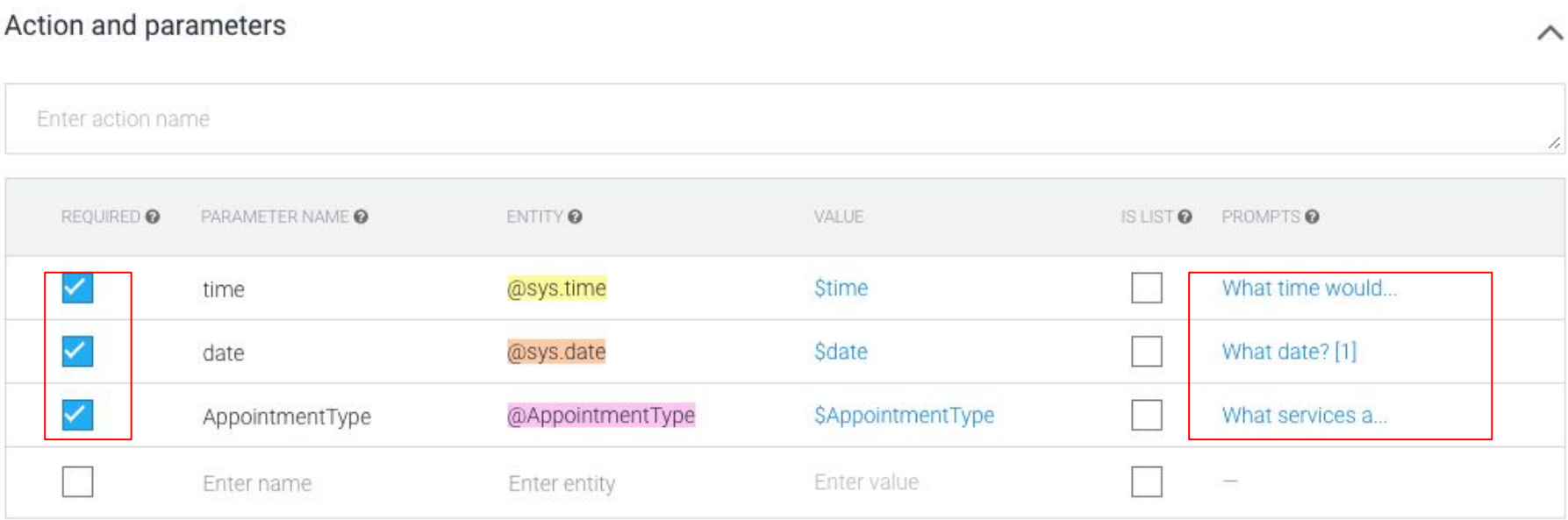
Define synonyms Allow automated expansion Fuzzy matching

Drivers License	DL, Drivers License, driving test, license, real ID, test
Others	Others, none, something else
Vehicle registration	Vehicle registration, car registration, register, registration
Click here to edit entry	


set an appointment at 2pm on Monday for license
PARAMETER NAME
ENTITY
RESOLVED VALUE
time
@sys.time
at 2pm
date
@sys.date
on Monday
AppointmentType
@AppointmentType
license

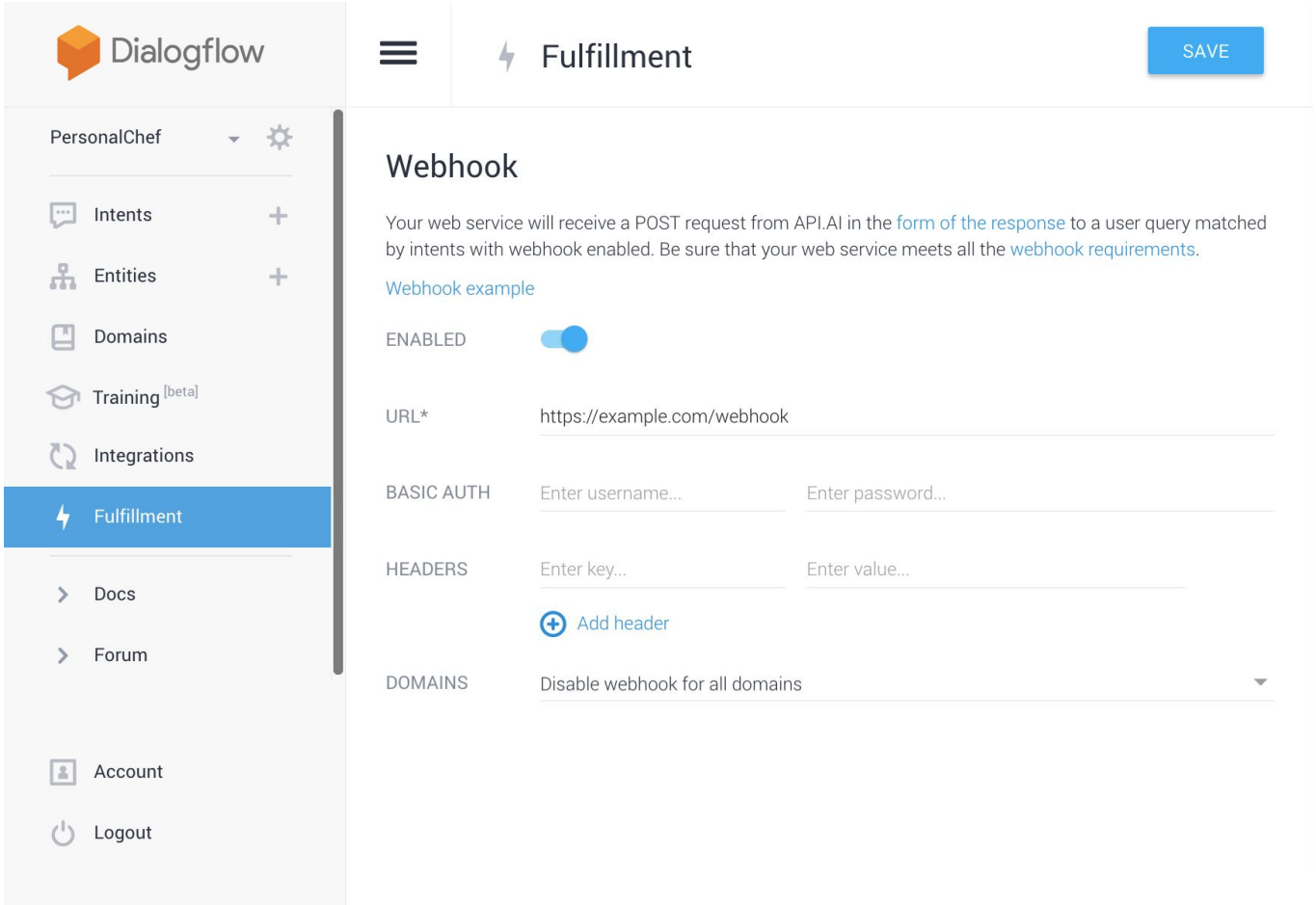

Action and parameters
Enter action name
REQUIRED
PARAMETER NAME
ENTITY
VALUE
IS LIST
PROMPTS
time
@sys.time
$time
What time would...
date
@sys.date
$date
What date? [1]
AppointmentType
@AppointmentType
$AppointmentType
What services a...
Enter name
Enter entity
Enter value

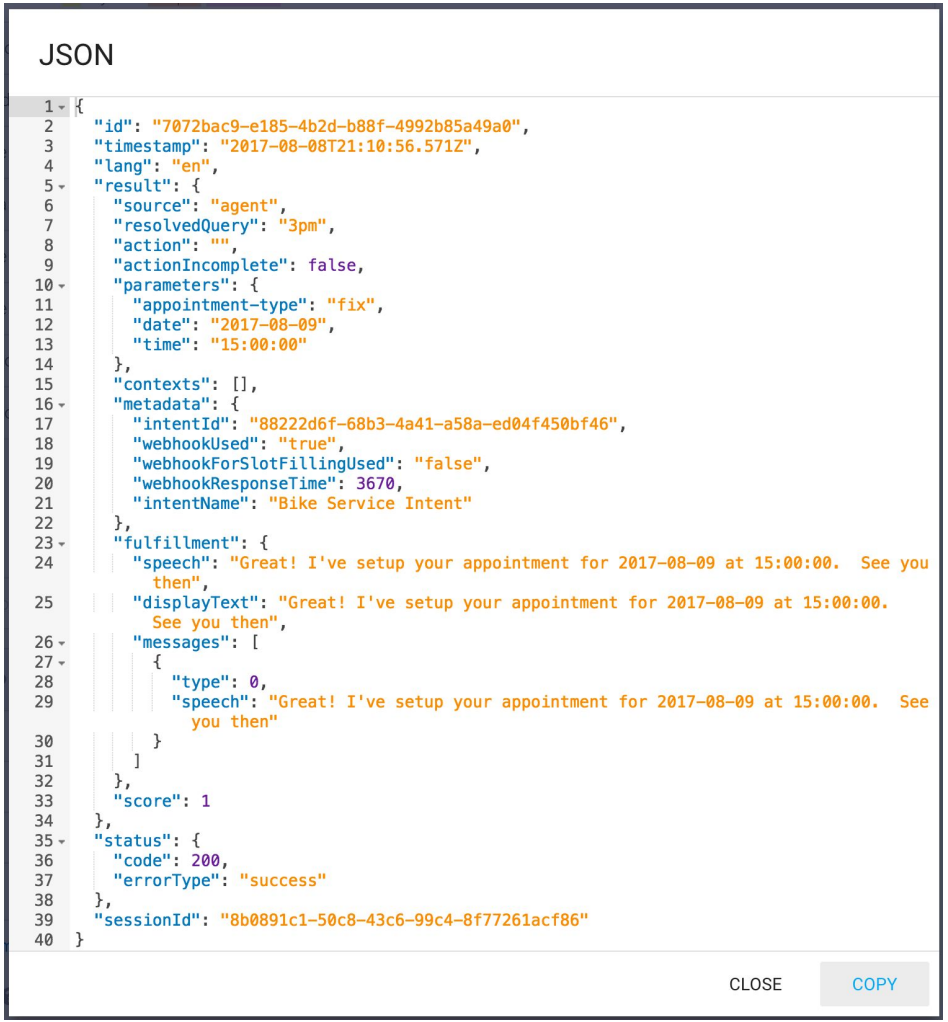
Parameters


Action and parameters
Enter action name
REQUIRED
PARAMETER NAME
ENTITY
VALUE
IS LIST
PROMPTS
time
@sys.time
$time
What time would...
date
@sys.date
$date
What date? [1]
AppointmentType
@AppointmentType
$AppointmentType
What services a...
Enter name
Enter entity
Enter value
—

Fulfillment

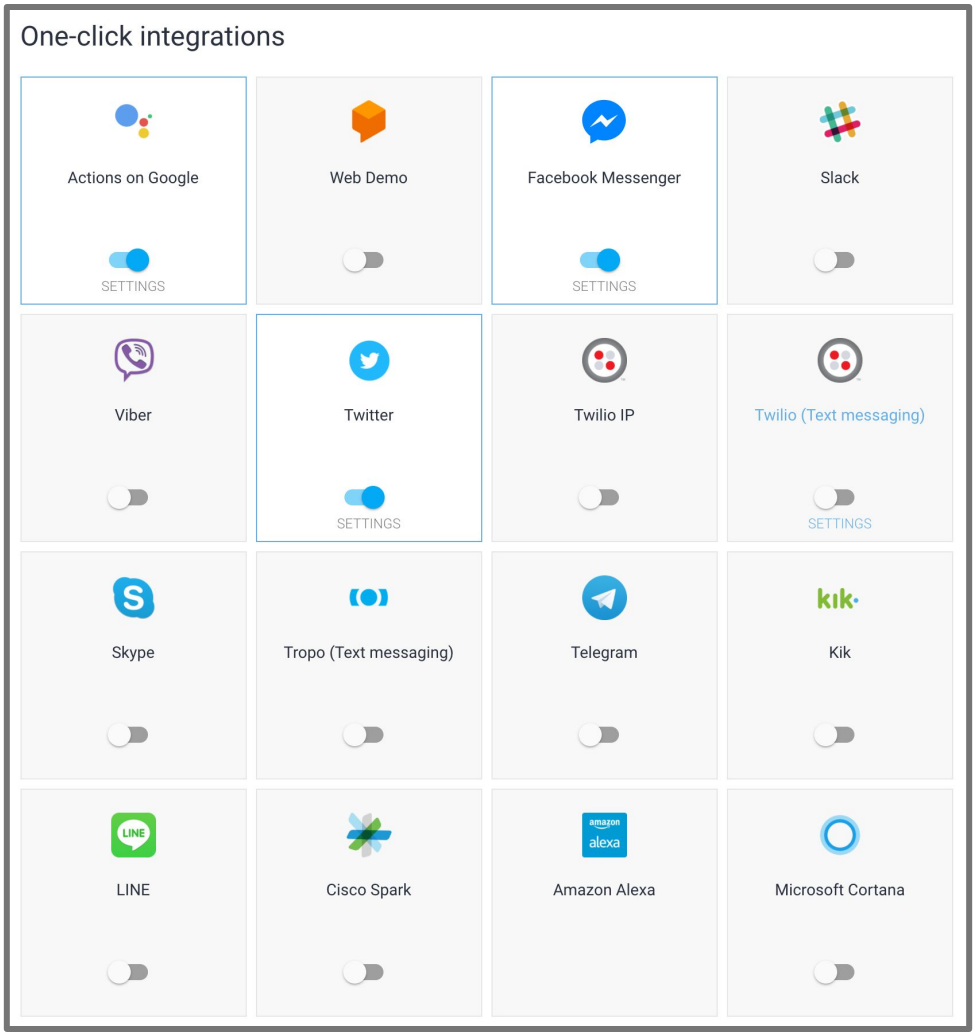
Connect an agent with your back end code.


Dialogflow
Fulfillment
SAVE
PersonalChef
Intents
Entities
Domains
Training [beta]
Integrations
Fulfillment
Docs
Forum
Account
Logout
Webhook
Your web service will receive a POST request from API.AI in the form of the response to a user query matched by intents with webhook enabled. Be sure that your web service meets all the webhook requirements.
Webhook example
ENABLED
URL*
https://example.com/webhook
BASIC AUTH
Enter username...
Enter password...
HEADERS
Enter key...
Enter value...
Add header
DOMAINS
Disable webhook for all domains


JSON
{
"id": "7072bac9-e185-4b2d-b88f-4992b85a49a0",
"timestamp": "2017-08-08T21:10:56.571Z",
"lang": "en",
"result": {
"source": "agent",
"resolvedQuery": "3pm",
"action": "",
"actionIncomplete": false,
"parameters": {
"appointment-type": "fix",
"date": "2017-08-09",
"time": "15:00:00"
},
"contexts": [],
"metadata": {
"intentId": "88222d6f-68b3-4a41-a58a-ed04f450bf46",
"webhookUsed": "true",
"webhookForSlotFillingUsed": "false",
"webhookResponseTime": 3670,
"intentName": "Bike Service Intent"
},
"fulfillment": {
"speech": "Great! I've setup your appointment for 2017-08-09 at 15:00:00. See you then",
"displayText": "Great! I've setup your appointment for 2017-08-09 at 15:00:00. See you then",
"messages": [
{
"type": 0,
"speech": "Great! I've setup your appointment for 2017-08-09 at 15:00:00. See you then"
}
]
},
"score": 1
},
"status": {
"code": 200,
"errorType": "success"
},
"sessionId": "8b0891c1-50c8-43c6-99c4-8f77261acf86"
}
CLOSE
COPY

Integration

Connect with your users
across multiple platforms.



Dialogflow

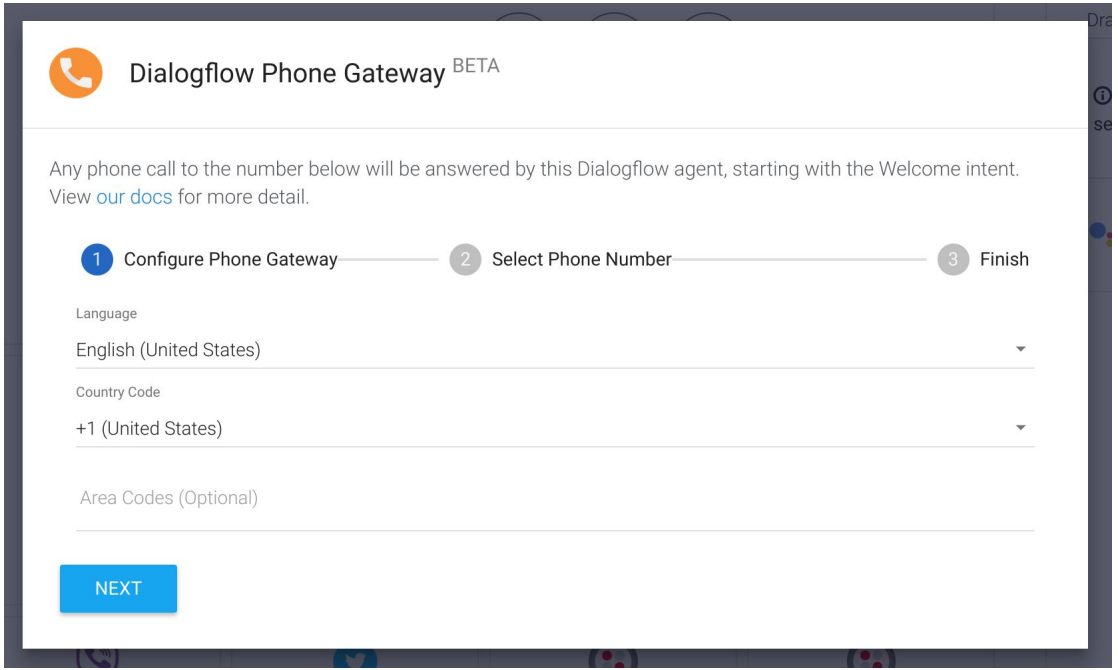
Google

Phone Gateway

Lets you instantly convert any Dialogflow virtual agent into a conversational IVR (Interactive Voice Response) system.

Based on the same Google infrastructure used by Google Voice, Project Fi, Google Hangouts.

Telephony service, speech recognition, NLU, and speech synthesis are handled out-of-the-box.



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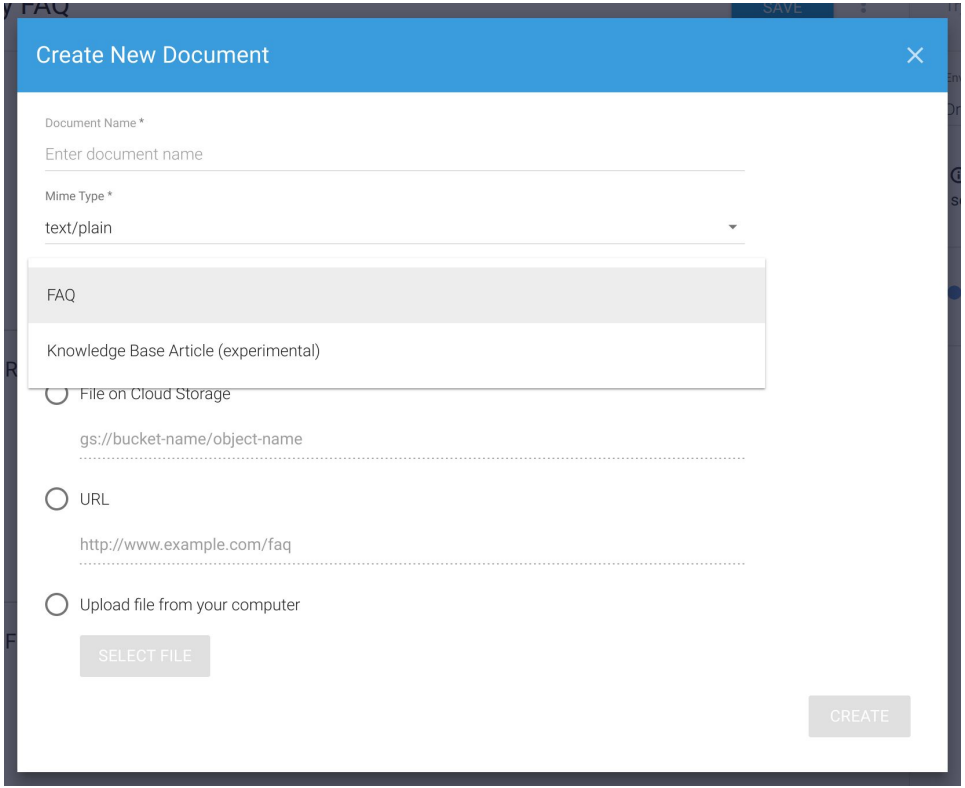
Knowledge Connectors

Dialogflow lets you pre-build explicit responses to specific user intents.

Knowledge Connectors enrich the conversation by complementing explicit intents with automated responses sourced from internal knowledge bases (articles, FAQs, etc.).



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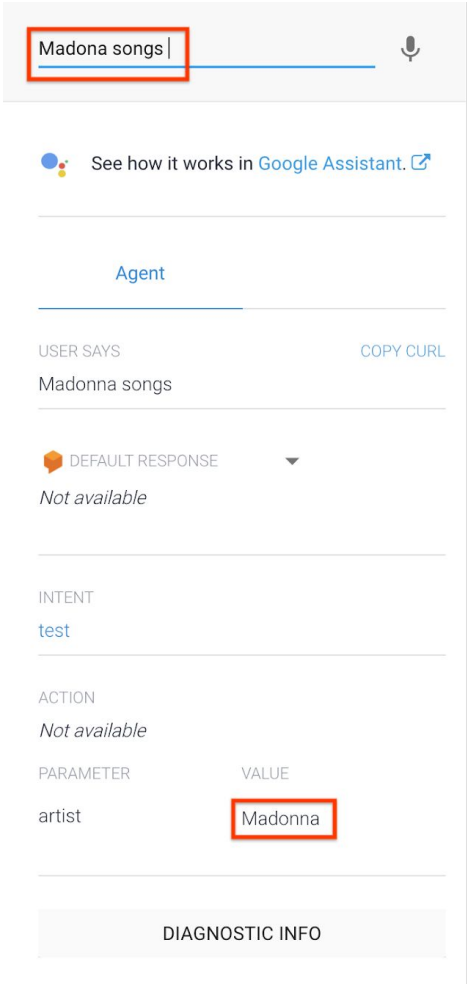
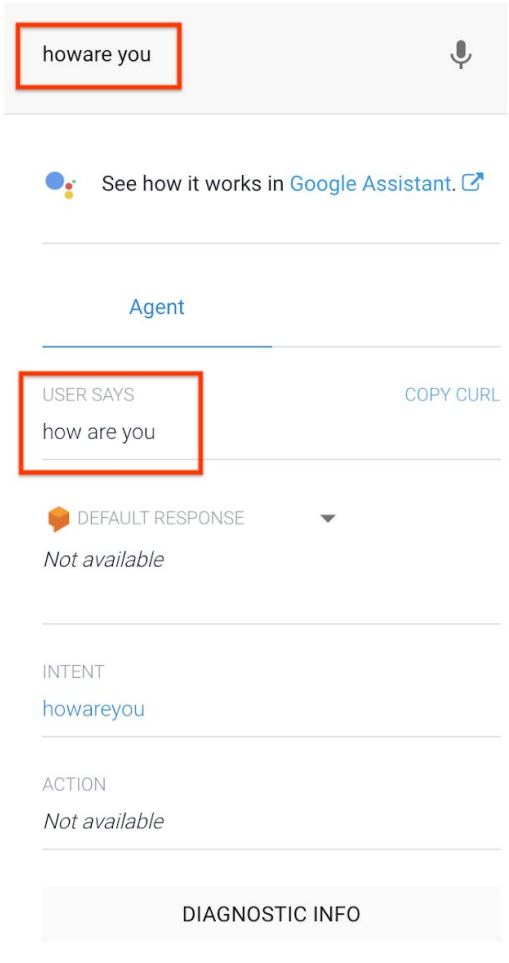
Automatic Spelling Correction

Users commonly use abbreviations and incorrect spelling or grammar, particularly when typing in a hurry.

Our new Automatic Spelling Correction feature uses technology developed for Google Search to correct for user typos.

Google Cloud

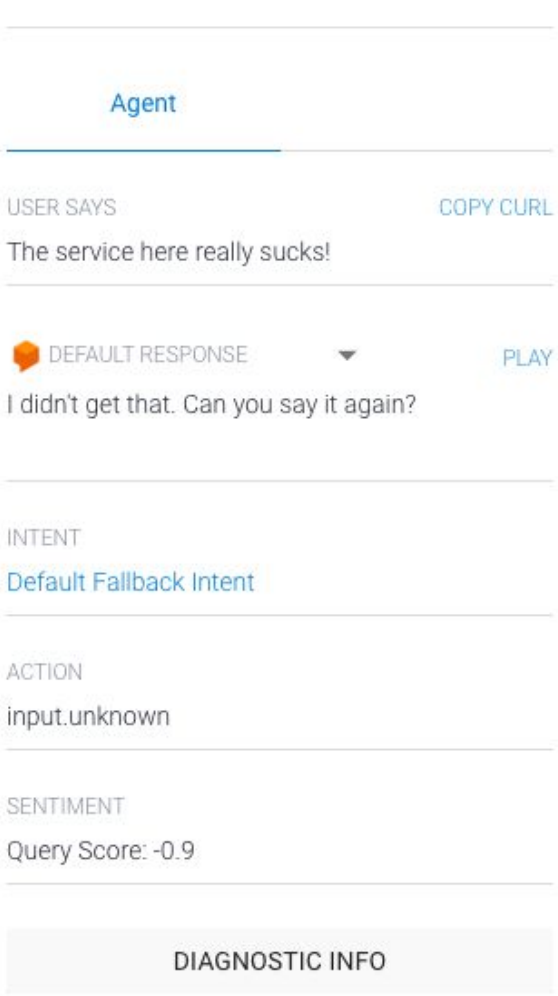




Built-in Sentiment Analysis

Measures sentiment of a user request to provide a data point about the user's emotional state of mind.

That data can be used to help determine the need for bringing in live agent help.



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Built-in Text-to-Speech

Dialogflow uses Cloud Text-to-Speech powered by DeepMind's WaveNet technology (closes audio-quality gap with human speech by 70%) to deliver natural, precise speech responses.

Useful for telephony as well as IoT applications (e.g., cars, TVs).

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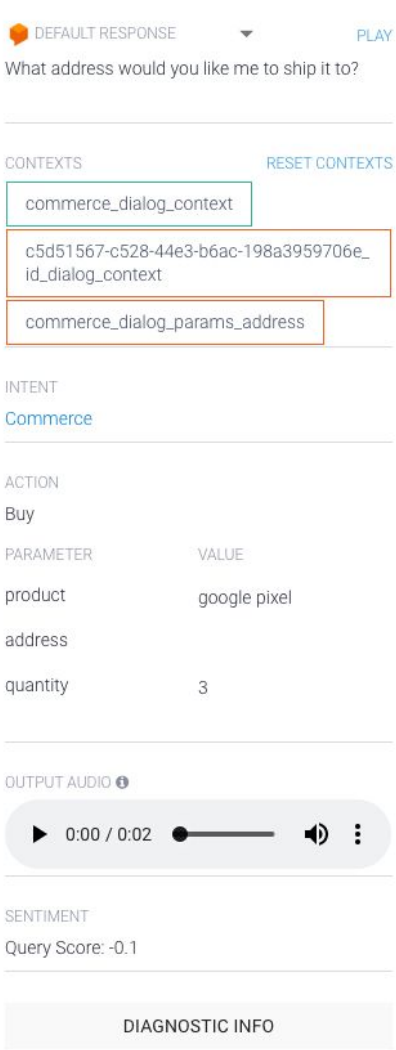

Steps to Create Conversation Experience

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A world-class conversational interface is a multi-step process

1. Identify top user **journeys** that could be automated
2. Build **business** plan
3. Design a **persona**
4. Write professional **scripts**
5. Connect to backend **enterprise systems**
6. Build PoC and **collect feedback**
7. Connect to **human agent** system for human intervention

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Deconstructing Chatbots

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New features

Phone Gateway Beta

Lets you instantly convert any Dialogflow virtual agent into a conversational IVR

Knowledge Connectors Beta

Complements explicit intents with automated responses sourced from knowledge bases

Automatic Spelling Correction Beta

Uses technology similar to that used in Google Search to correct for user typos

Built-in sentiment analysis Beta

Measures sentiment to provide a data point about need for live agent handover

Built-in Text-to-Speech Beta

Powered by DeepMind's WaveNet to deliver high-quality speech responses for telephony & IoT

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