

BOTS, AI, AND JAVASCRIPT



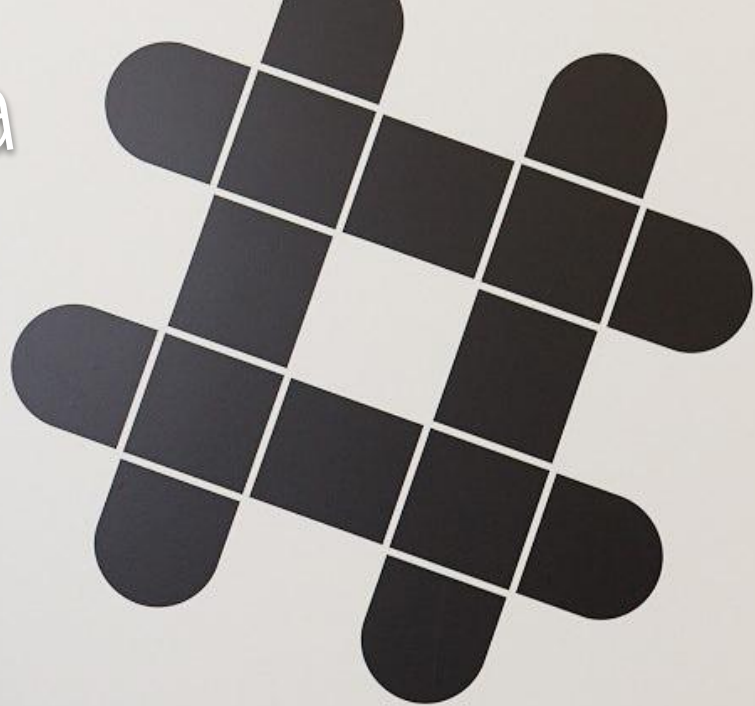
Let's Get Chatty with Conversational Interface in JavaScript

#RenderConf

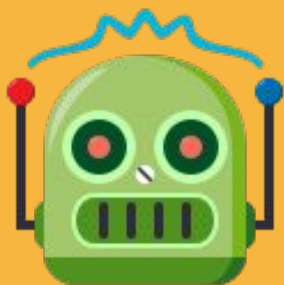
Tomomi Imura (@girlie_mac)

tomomi imura

@girlie_mac




- an open web & tech advocate
- code JavaScript / Node.js
- work at Slack
- an advisor at Code Chrysalis
- a cat lady of the InterWeb



"Bots are like new applications that you can converse with. "

-- Satya Nadella, Microsoft



A photograph of Sundar Pichai, CEO of Google, standing on a stage during a presentation. He is wearing a dark jacket, glasses, and jeans, and is gesturing with his hands as he speaks. Behind him is a large screen displaying the text "Mobile first to AI first". The stage is lit with spotlights, and there are decorative elements like a green triangle and a blue triangle on the stage floor.

Mobile first to AI first

*“We will evolve
in computing
from a mobile
first to an AI first
world.”*

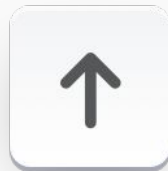
-- Sundar Pichai, Google



Traditional Web & App Interactions

hello | **Send**

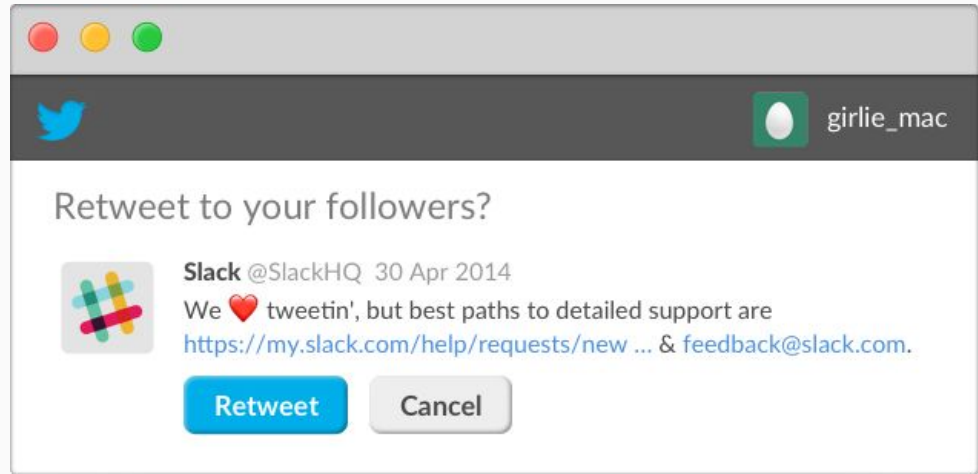
tab



Special Meals 

- Vegetarian lacto-ovo
- Hindu vegetarian**
- Vegan
- Gluten-free
- Kosher
- Muslim

Modern Web & Apps with Social Interactions







Conversational User Interactions: Siri and Alexa (Voice Assistants)



In various form-factors

Conversational User Interactions for Kids - with Voice



-  Tell Jokes
-  Answer Questions
-  Play Games
-  Make Stories

Conversational User Interactions in a robot shape - with Voice



Conversational User Interactions: Google Assistant (Voice & Text)



(GIF animation)

Conversational User Interactions: Slack Bots (Text with GUI)



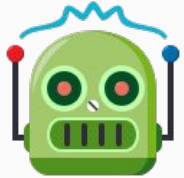
 **Office Space Bot** 4:45 PM
Don't forget your TPS report!



Graphic Interface to Conversational Interface

What kind of crust do you want?

1. Regular crust
2. Thin crust
3. Gluten free crust



Deliver me a large margherita pizza!



Thin crust

cha ching!



**Conversational
Interface achieves:**

**Natural user
interactions with a
minimal visual
interface.**

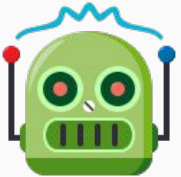
**No UI Clutter.
Less Time Spent.**

Come over to my place!

It's 325 Ruby Street.

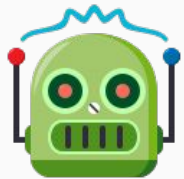


Request a ride



Where is the address
of your home?





Your driver, Sam will pick you up in 6 minutes. Look for the red Toyota Prius!

Yes, get me a ride now



Alexa UX (“Voice Chrome” Examples)

Listening



Speaking



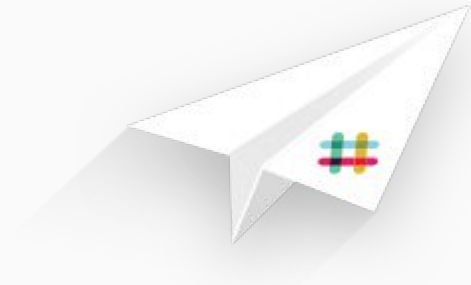
(GIF animation)

**Conversational
Interface is:**

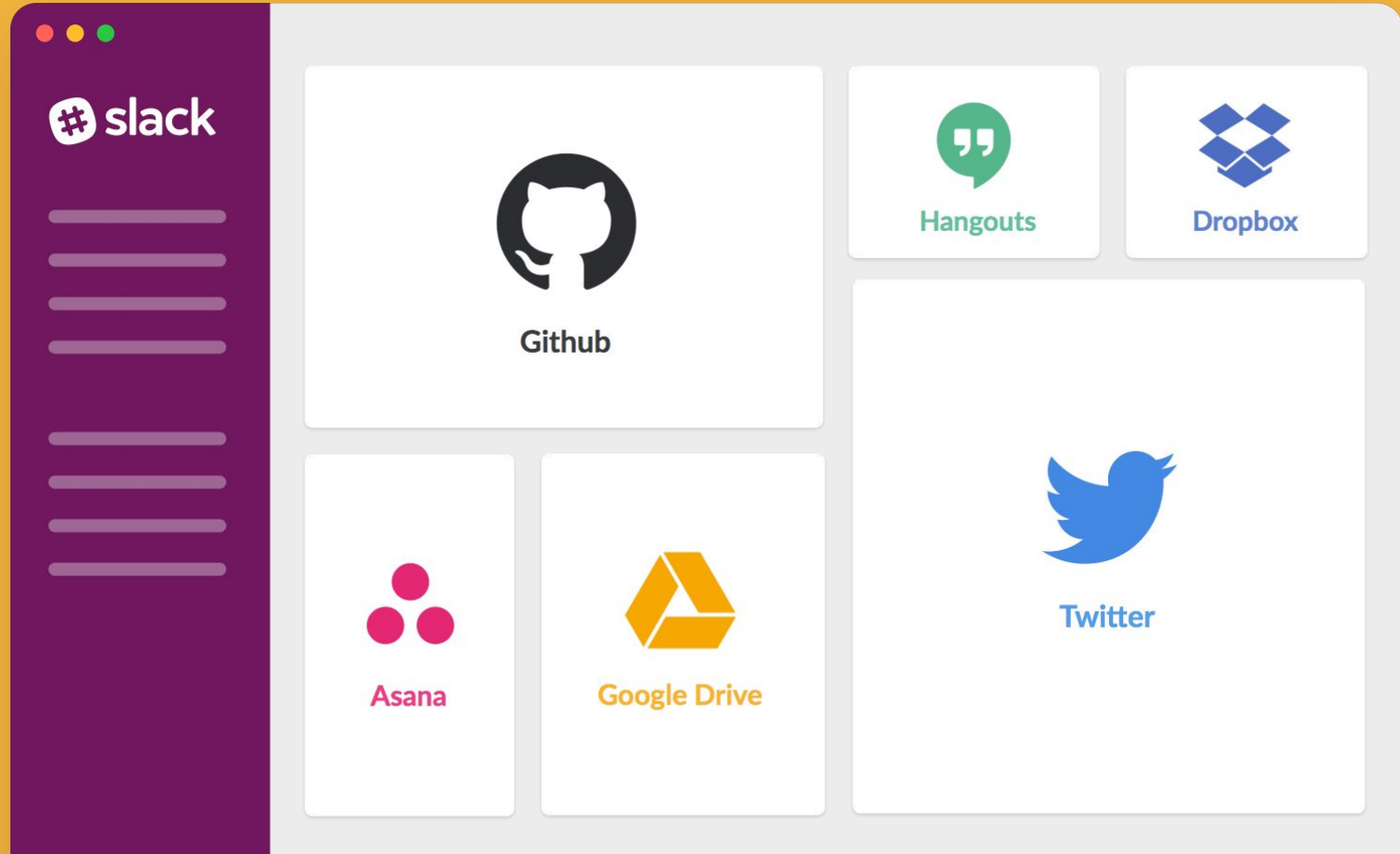
- **Intuitive**
- **Accessible**
- **Productive**

Messaging Platforms

- Slack
 - Facebook Messenger
 - Telegram
 - WeChat
 - Kik
 - Viber
 - LINE
- etc.



Messaging + Bots for More Interactive Communications





Stage Chicken APP 12:56 PM

Your code is being staged by dhruv in [stage 125545](#)

| [PR #66713](#) from apidocs_misc_bugs - timura

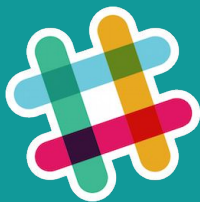


Deploy Chicken APP 1:00 PM

Your code is being deployed by kevin in [deploy 125546](#)

| [PR #66713](#) from apidocs_misc_bugs - timura

Slack bots at



JIRA Bot APP 2:05 PM

[PFA-489](#) updated by brenda:

Create documentation for new conversations.* endpoints

| **Epic Link** changed from [PFA-128](#) to [PFA-694](#)

Status changed from [In Development](#) to [Done](#)

Resolution changed to [Fixed](#)

👁 Only visible to you



Lunch Train APP 3:58 PM

You've started a lunch train! I've sent you controls via [@slackbot](#), conductor.

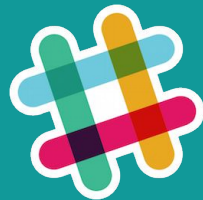


Lunch Train APP 3:58 PM

Chew choo! [@girlie_mac](#) started a train to Blue Bottle at 4:00 pm.
[@John Agan](#) is on board. Will you join?

Board the train

Slack bots at



Tomomi Imura JS 5:31 PM

(ノ ◦ ◦) ノ へ ー ー

Custom response



slackbot 5:31 PM

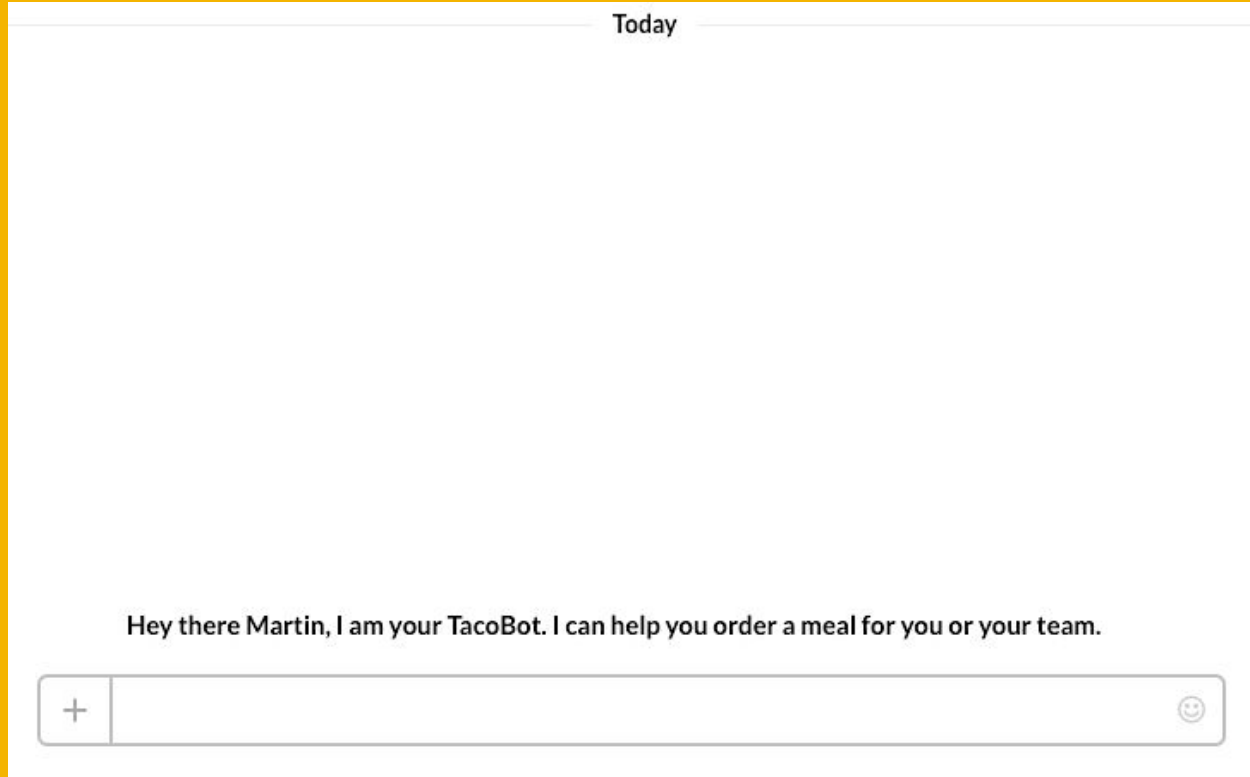
ー ー ノ (◦ _ ◦ ノ) - Please respect tables.



slackbot 3:00 PM



TacoBot by Taco Bell



<https://www.tacobell.com/feed/tacobot>

Natural Conversation APIs

- DialogFlow (API.ai /Google)
- Wit.ai (Facebook)
- Microsoft Bot Framework
- Motion.ai
- Chatbots.io
- Converse AI
- Landbot.io
- Recast.ai
- ManyChat
- Fluent.ai (Voice UI)

etc.

Remind me to feed the baby tomorrow at 7am

Did you try...Hi, robot! 🗨️

```
intent = agenda / create event  
task   = feed the baby  
date   = April 27th 2013, 7am
```



Your user



Wit.ai

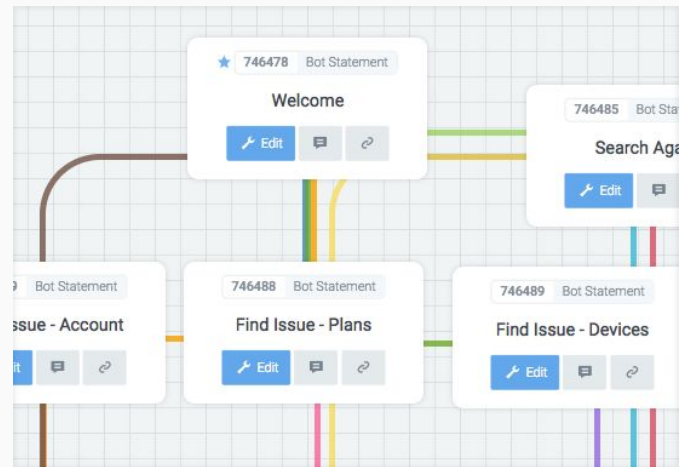


Your app

AlaaS

Artificial
Intelligence as
a Service 🤓

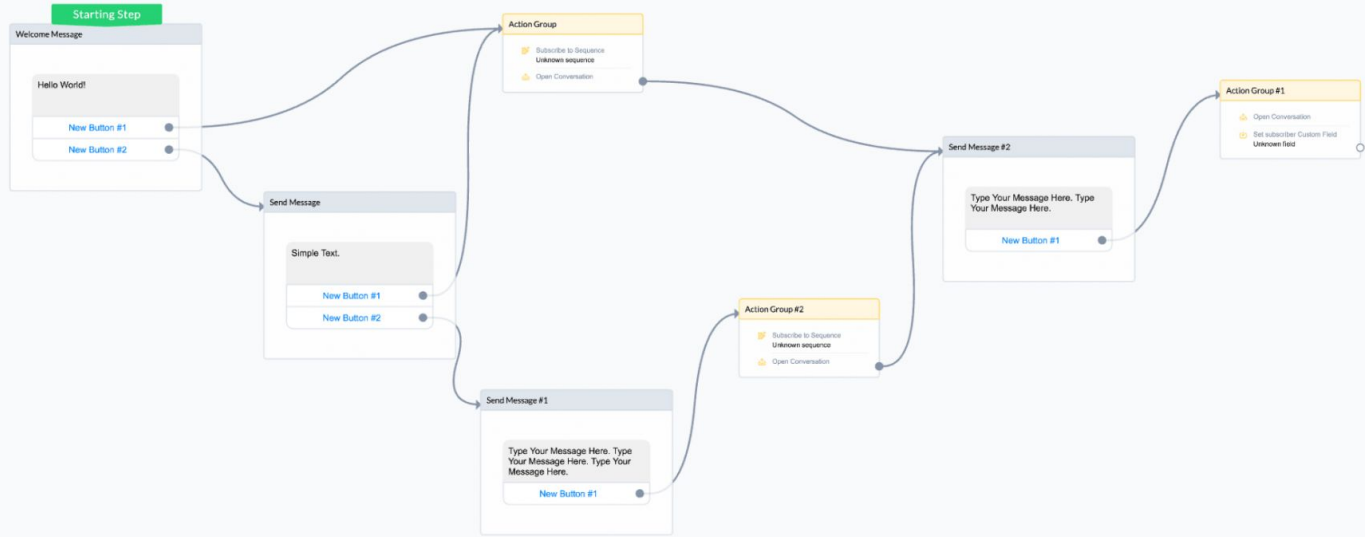
Motion.ai



One-click integrations

 Actions on Google <input type="checkbox"/>	 Web Demo <input type="checkbox"/>	 Facebook Messenger <input checked="" type="checkbox"/> SETTINGS	 Slack <input checked="" type="checkbox"/> SETTINGS
 Viber <input type="checkbox"/>	 Twitter <input type="checkbox"/>	 Twilio IP <input type="checkbox"/>	 Twilio (Text messaging) <input type="checkbox"/>
 Skype	 Tropo (Text messaging)	 Telegram	 Kik

DialogFlow (API.ai)



ManyChat

Hi Linda! Are you flying from San Francisco, as usual?

Hi,
I want to book a flight!



Yes, from SFO.

Where are you flying to?

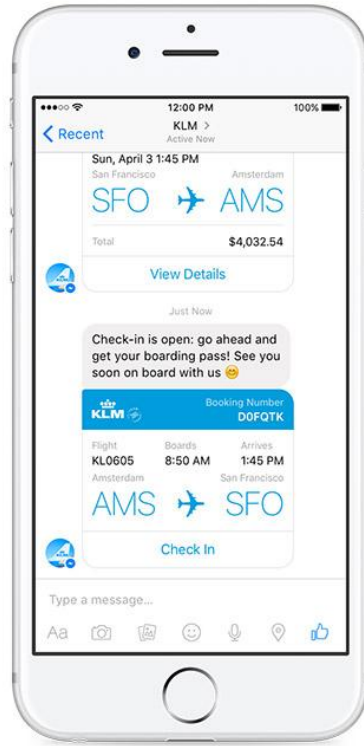
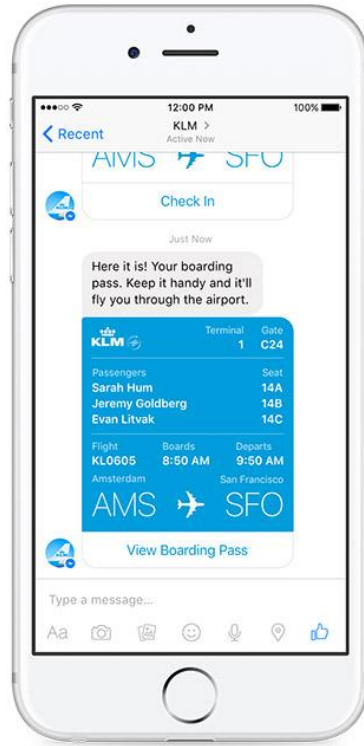
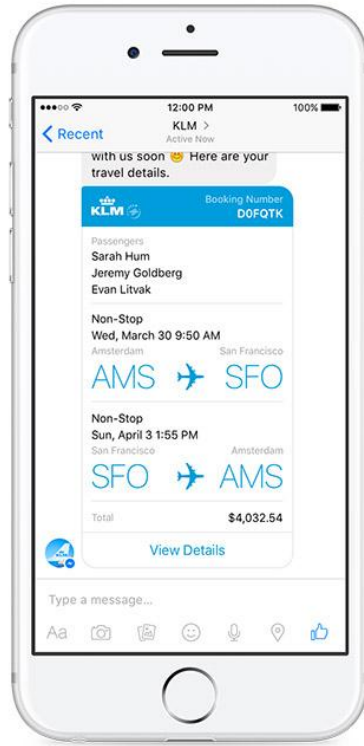
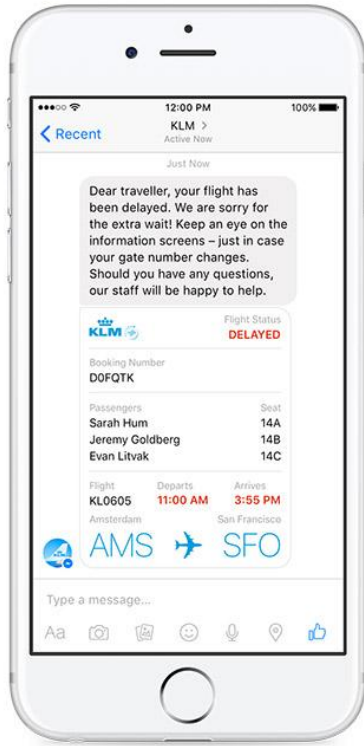
London



An airline customer service bot

Linda may not know she is talking to a bot!





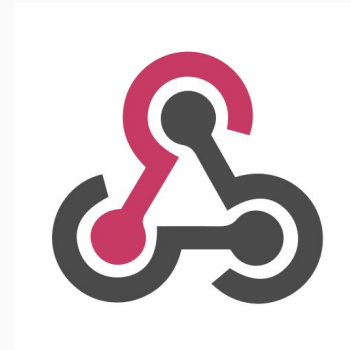
More Powerful NLP Platforms & APIs

Natural Language Processing & Cognitive platforms:

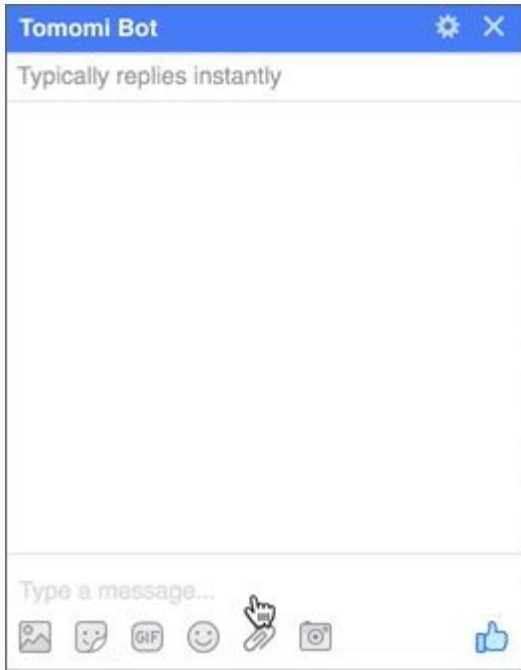
- IBM Watson
- Google Cloud Natural Language API
- Microsoft LUIS
- Amazon Lex
- Baidu UNIT

Conversational Interface With JavaScript

The APIs are
mostly
accessible with
JS



Example: DialogFlow (API.ai) + FB Messenger



```
const app = require('apiai')(CLIENT_ACCESS_TOKEN);
```

```
function sendMessage(event) {  
  let sender = event.sender.id;  
  let text = event.message.text;
```

```
  let ai = app.textRequest(text, {  
    sessionId: SESSION_STRING });
```

```
  ai.on('response', (response) => { // Got a response from api.ai  
    let aiText = response.result.fulfillment.speech;  
    // Then POST to https://graph.facebook.com/v2.6/me/messages
```

```
    ...  
  });  
  ai.end();  
}
```

API.ai Node.js SDK

Example: DialogFlow (API.ai) + FB Messenger

The screenshot displays the DialogFlow console interface. On the left, a 'Domains' section contains a search bar and a grid of domain cards. The 'Small Talk' domain is selected and highlighted in blue. Below the grid are toggle switches for each domain. On the right, a chat simulation window shows a conversation:

Try it now...

Domains

USER SAYS COPY CURL
hey what's up

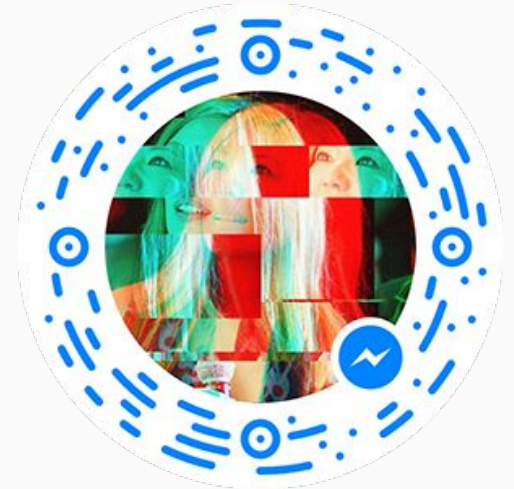
RESPONSE PLAY
I'm just happy to be here on your device. I'm ready to learn lots of new skills.

INTENT
Not available

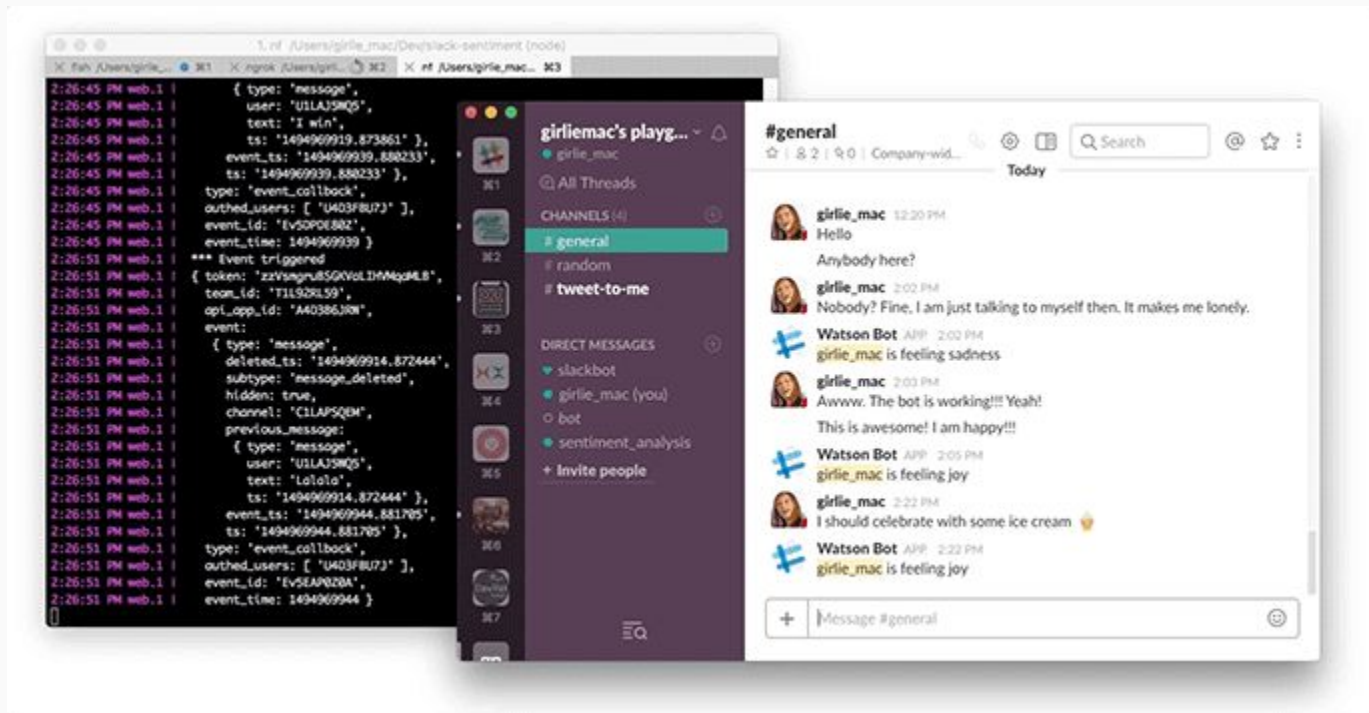
ACTION
smalltalk.greetings

PARAMETER	VALUE
simplified	what is up

SHOW JSON



Example: Slack Message Sentiment Analysis with IBM Watson



(GIF animation)

The bot workflow:

1. Read each message on a Slack channel
2. Send the message to IBM Watson for examination
3. If the likelihood of an emotion is above the given confidence threshold post the most prominent emotion

Example: IBM Watson + Slack



HTTP POST using ExpressJS

```
app.post('/events', (req, res) => {  
  let q = req.body;  
  
  if (q.type === 'event_callback') {  
    if(!q.event.text) return;  
    analyzeTone(q.event);  
  }  
});
```

Use Slack Events API to grab the text when a user post a message

Pass the text data to Watson to analyze

Example: IBM Watson + Slack



```
const watson = require('watson-developer-cloud');
let tone_analyzer = watson.tone_analyzer({
  username: process.env.WATSON_USERNAME,
  password: process.env.WATSON_PASSWORD,
});

const confidencethreshold = 0.55;
tone_analyzer.tone({text: text}, (err, tone) => {
  tone.document_tone.tone_categories.forEach((tonecategory) => {
    if(tonecategory.category_id === 'emotion_tone'){
      tonecategory.tones.forEach((emotion) => {
        if(emotion.score >= confidencethreshold) {
          postEmotionOnSlackChannel(emotion);
        }
      });
    }
  });
});
```

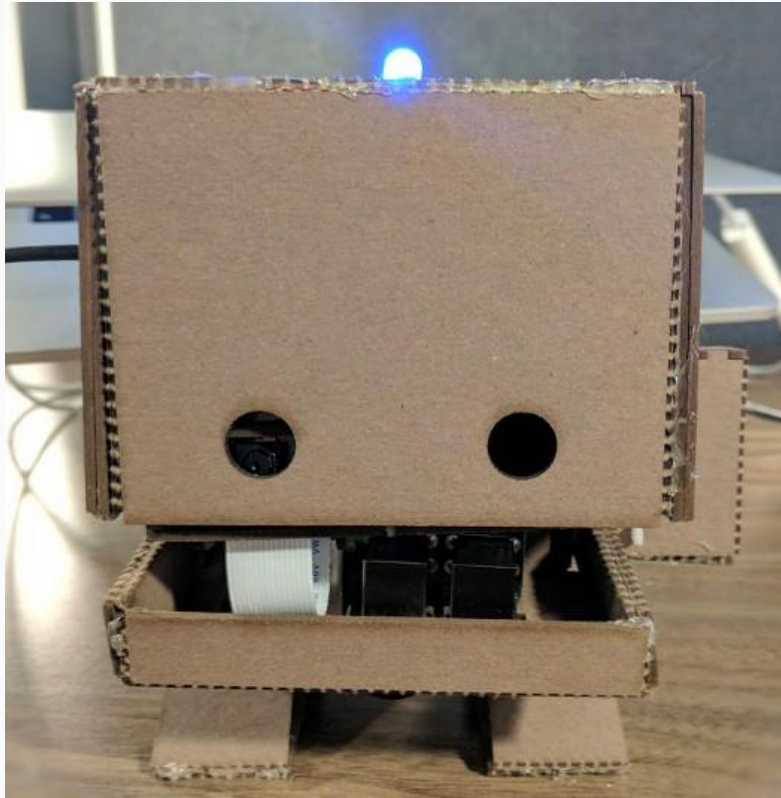
Returns emotions score in 0 to 1

Just initializing it w/ your API credentials

Post the result on Slack



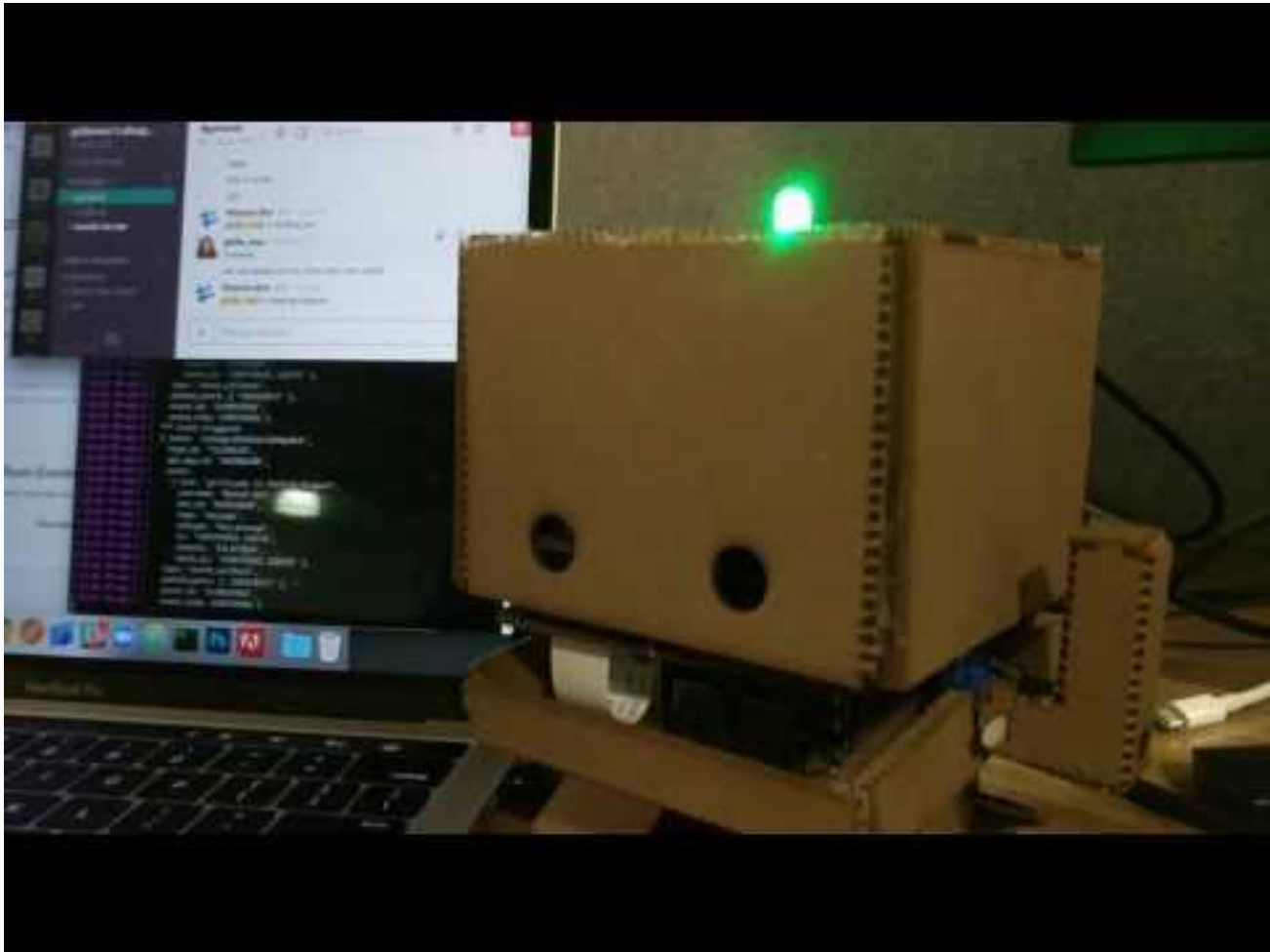
Example: IBM Watson + Slack + Raspberry Pi (for fun)

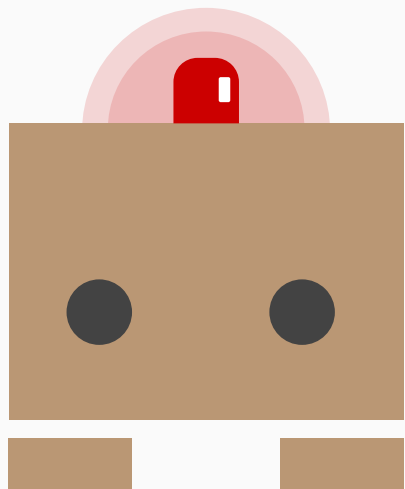


```
function colorEmotion(emotion) {  
  if (emotion.tone_id === 'anger') {  
    setLED(red);  
  } else if(emotion.tone_id === 'joy') {  
    setLED(yellow);  
  } else if(emotion.tone_id === 'fear') {  
    setLED(purple);  
  } else if(emotion.tone_id === 'disgust') {  
    setLED(green);  
  } else if(emotion.tone_id === 'sadness') {  
    setLED(blue);  
  }  
}
```



Change the LED color to match the emotion





An angry customer detected. Connect the customer with a human!

Ack, this sucks! I want my money back!

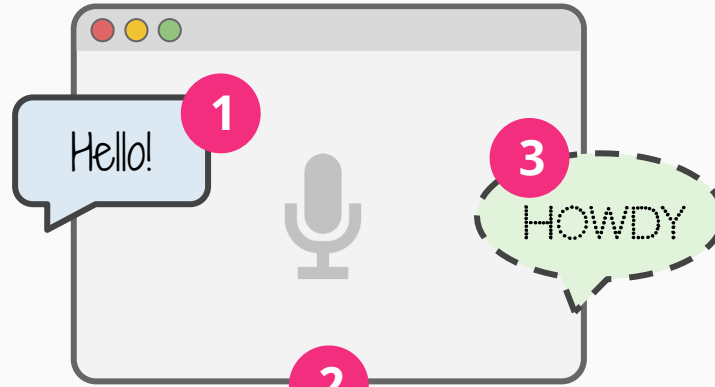


Conversational Interface with Voice in Browser?

Project: Artificial Voice Chat

1. User talk to browser

Voice command:
Voice -> Text



3. Browser speaks back
Text -> Synthetic Voice



2. Generate Artificial reply
Using the 3rd party NLP API



Web Speech API

1 Speech Recognition & 3 Speech Synthesis



<http://caniuse.com/#feat=speech-recognition>

<http://caniuse.com/#feat=speech-synthesis>

Web Speech API: Speech Recognition

```
const SpeechRecognition =  
window.SpeechRecognition || window.webkitSpeechRecognition;
```

In the current Chromium, it is still prefixed

```
const recognition = new SpeechRecognition();
```

Get an instance of the SpeechRecognition, the controller interface

Web Speech API: Speech Recognition (Cont'd)

```
recognition.lang = 'en-US';  
recognition.interimResults = false;
```

Some properties

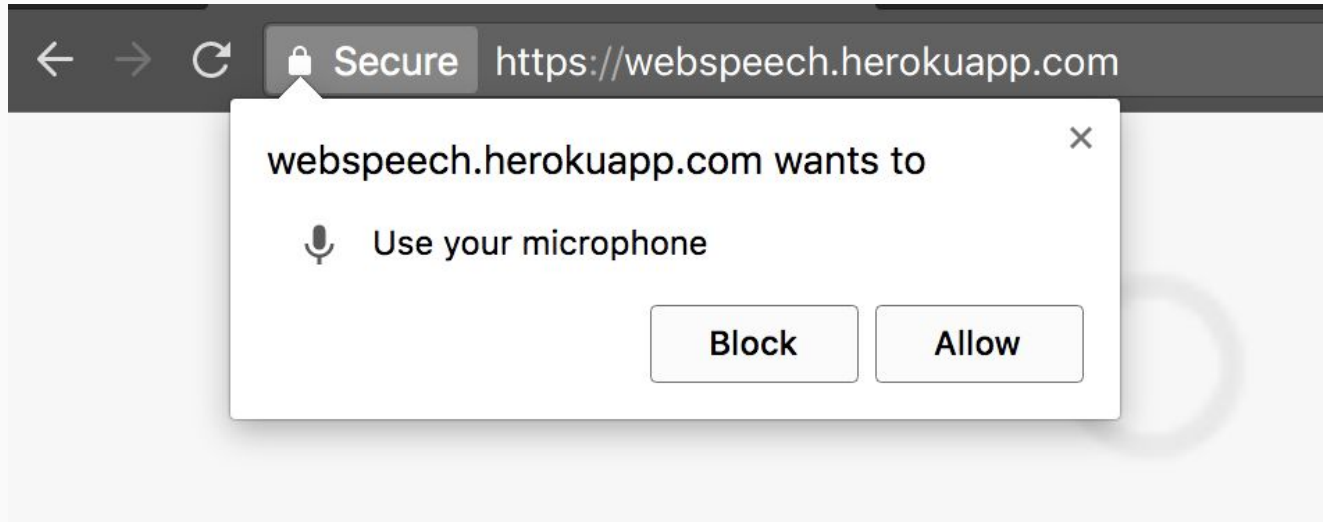
```
recognition.start();
```

Methods: start(), stop(), abort()

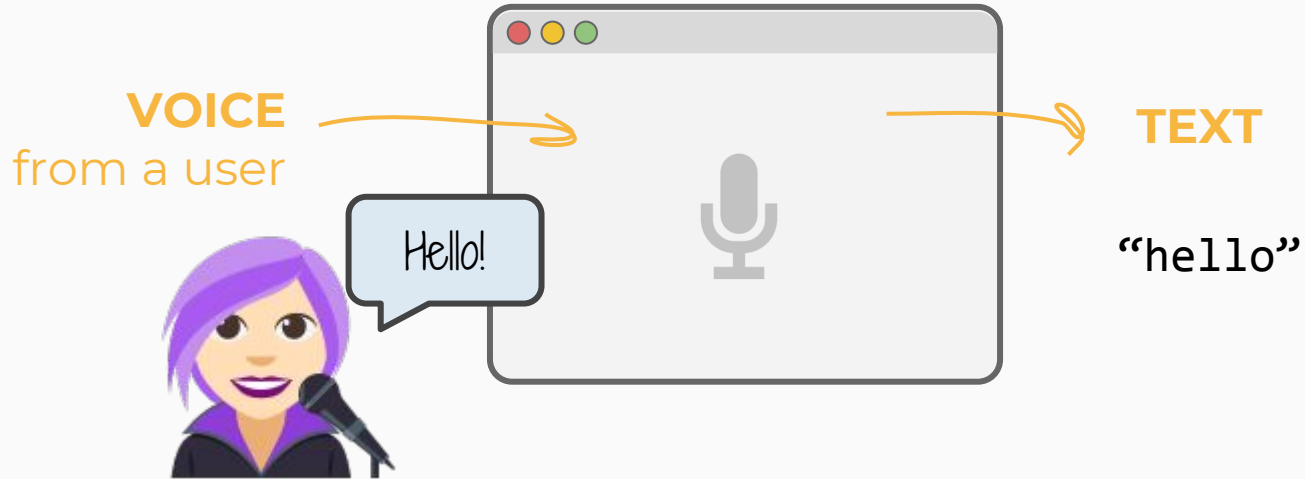
```
recognition.addEventListener('result', (e) => {  
  let last = e.results.length - 1;  
  let text = e.results[last][0].transcript;  
});
```

Events: onresult, onerror, onaudiostarted, onaudioend, etc.

Web Speech API: Speech Recognition - Mic Access Permission



Web Speech API: Speech Recognition



Speech Recognition demo on CodePen
<https://codepen.io/girliemac/pen/dmpxqv>



Web Speech API: Speech Synthesis

```
const synth = window.speechSynthesis;
```

← No vendor prefix 😊

```
const utterance = new SpeechSynthesisUtterance();
```

```
utterance.text = 'I am a robot';
```

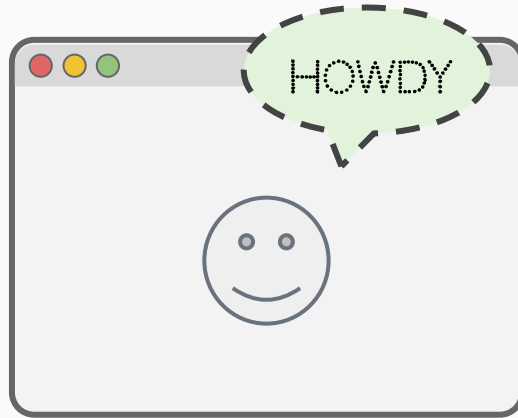
```
utterance.pitch = 1.5;
```

```
utterance.lang = 'ja-JP';
```

← Properties of the SpeechSynthesisUtterance interface

```
synth.speak(utterance);
```

Web Speech API: Speech Synthesis



TEXT to VOICE

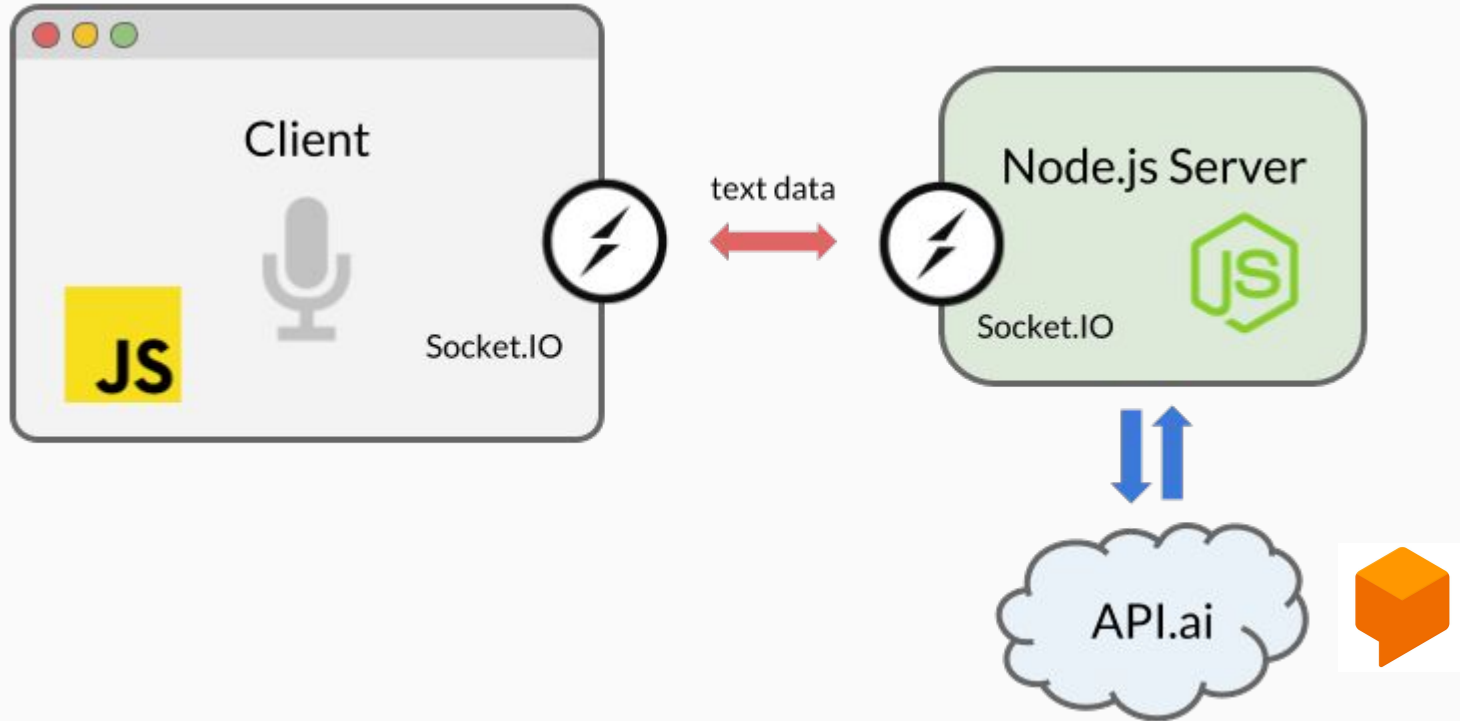
“howdy”

(voice by Alex or whoever it is)

Speech Recognition demo on CodePen
<https://codepen.io/girliemac/pen/dmpxqv>

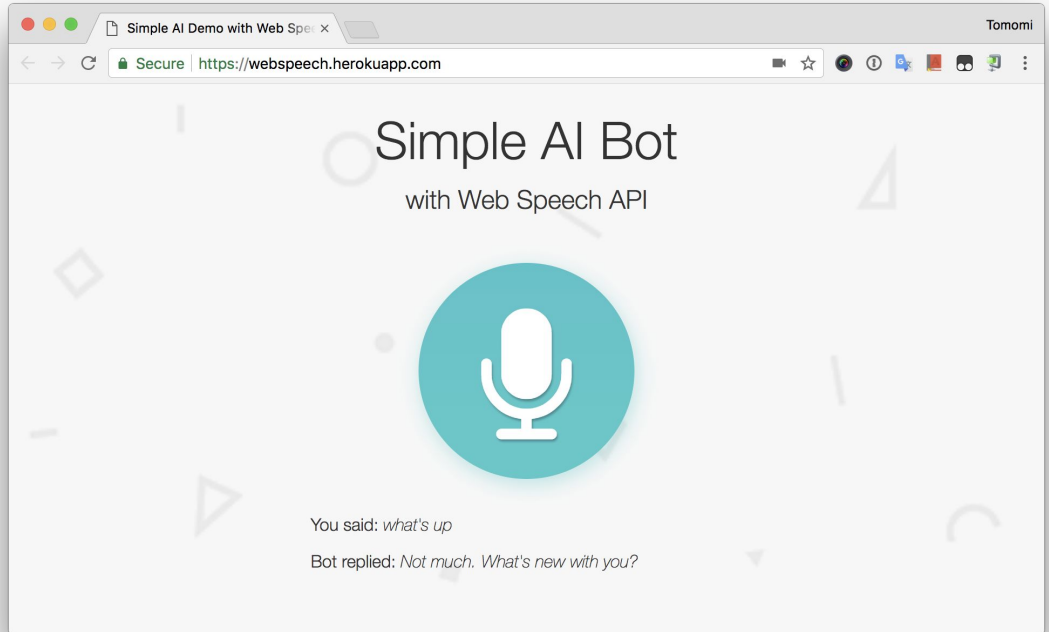


Project: Artificial Voice Chat



Demo time!

<https://webspeech.herokuapp.com/>



Building A Simple AI Chatbot With Web Speech API And Node.js

By [Tomomi Imura](#)

August 7th, 2017 Accessibility, API, UI

Using voice commands has become pretty ubiquitous nowadays, as **more mobile phone users use voice assistants** such as Siri and Cortana, and as devices such as Amazon Echo and [Google Home](#) have been invading our living rooms. These systems are built with speech recognition software that allows their users to issue [voice commands](#). Now, our web browsers will become familiar with to Web Speech API, which allows users to integrate voice data in web apps.

Smashing Newsletter

Subscribe to our email newsletter for useful tips and valuable resources, sent out every second Tuesday.

email address

234,898 **Subscribers** powered by MailChimp

As designing static pages has become untenable, many have started to approach design in a modular way. In this book, we'll identify what makes an **effective design system** that empowers teams to create great digital products. [Pre-order the book now](#) →



Article:
smashingmagazine.com/2017/08/ai-chatbot-web-speech-api-node-js/

**Conversational
Interface is
for human.**

**A bots interface really is
a human interface.**

It looks like you're writing a letter.

Would you like help?

- Get help with writing the letter
- Just type the letter without help
- Don't show me this tip again



Remember me?

Clippy 1997 - 2007

Thank you...

Ohhhh, wait! There's one more slide...

AI or cats,
which will take
over us first?

A black and white cat with green eyes is sitting on a yellow book. The book's cover features various business-related icons like a clock, a lightbulb, and a dollar sign. The title 'Managing Humans' is printed in large black letters. Below the title, there is a subtitle in red text that reads 'biting and Humorous Tal' and 'erino'.

**Managing
Humans**
biting and Humorous Tal
erino

Thank you,
really!

@girlie_mac

girliemac.com

github.com/girliemac

speakerdeck.com/girlie_mac





Attribution:

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