Beyond Web Interfaces

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I’m Fabrizio

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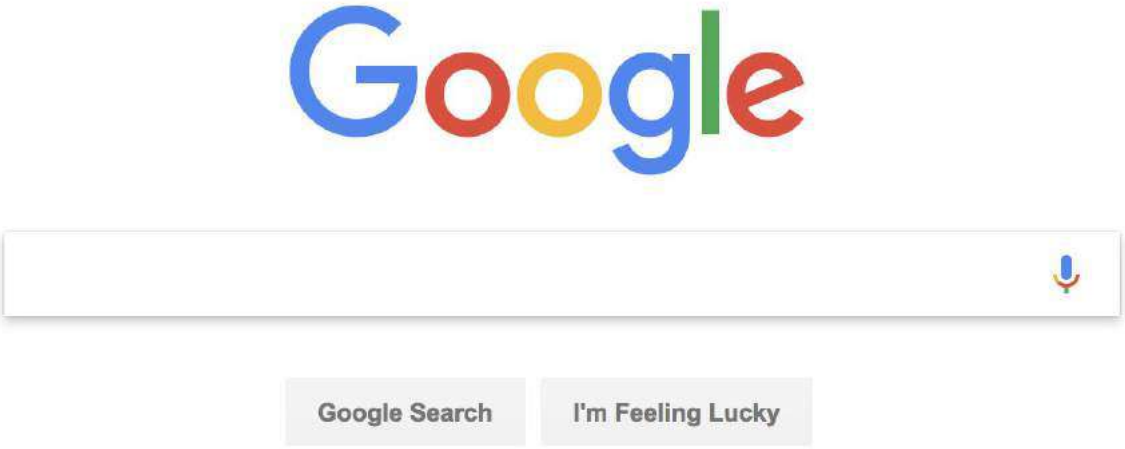
http://ciacchi.it - https://spryker.com

What is this talk about?

- Give you insights so you can start to look into the best articles, tools and books;
- Tell you real examples of (chat/voice) bots. How to implement them, so to solve real problems;
- Discuss solutions and ideas on how bots should solve existing problems.

It’s the next Far West



“Alexa, add soap to my shopping cart”

“I would like to see who sells shoes nearby”

It’s the next Far West

IBM
Watson & Cloud

https://www.ibm.com/cloud/ai

Facebook
Messenger / WhatsApp
PyTorch / Wit.ai
Marketplace

https://pytorch.org/

Cloud (AWS)
AI (Lex, Polly)
Machine Learning
Alexa (Voice-bot)

https://aws.amazon.com/machine-learning/

Cloud (Azure)
AI & ML
Any Windows device?

https://azure.microsoft.com/en-us/overview/ai-platform/

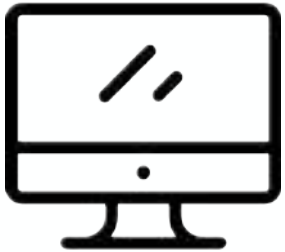
Apple Watch
Siri/Assistant
Shortcuts

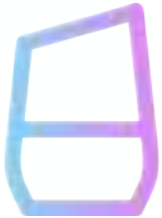
(not to mention Apple Car)

Google Cloud
Google Home
Tensorflow
Dialogflow

https://dialogflow.com/

User Journey





10 results

300-500 msec

1-2 steps

Search - 50 results

Response - 2 sec

Checkout - 4/5 steps

3 results

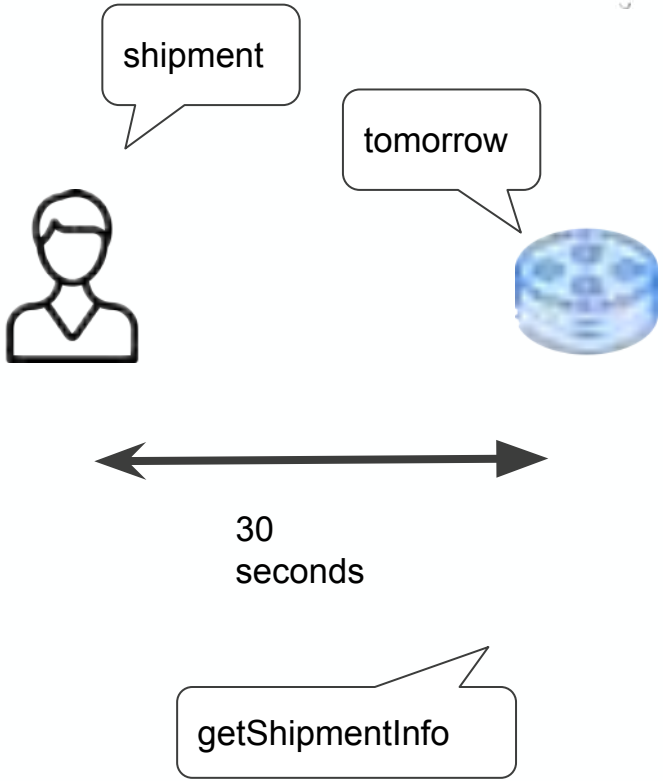
100 msec*

1 click

Chat VS Voice

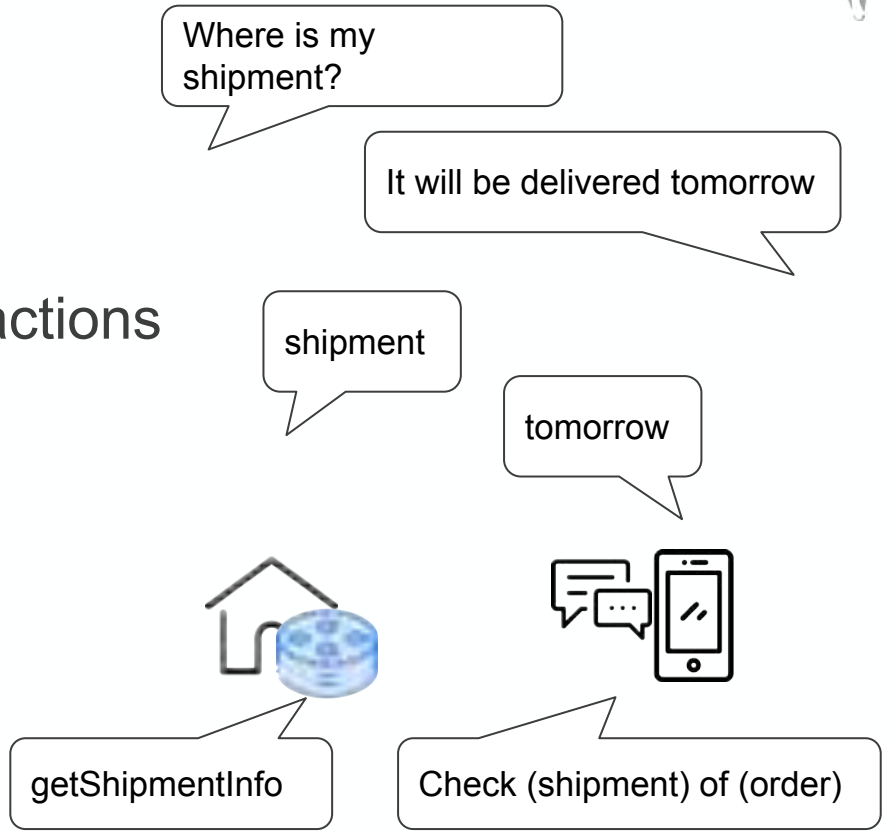
Similarities

- Convey small information
- Users want to ask for info
- Time interaction is short
- Narrow down to intent/response

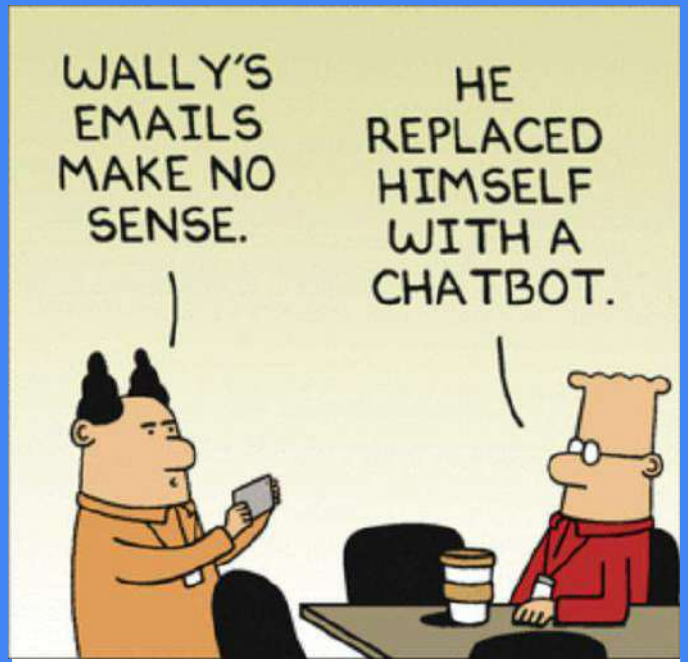


Differences

- Voice better for informative skills
- Voice has longer message/interactions
- Use cases are different
- Different technologies



Tell me more


WALLY'S EMAILS MAKE NO SENSE.
HE REPLACED HIMSELF WITH A CHATBOT.
DILBERT

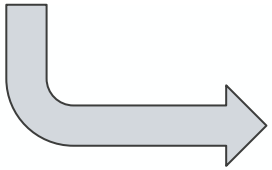
Start simple

- My example uses a Simple PHP Application:
  Can be Symfony, Spryker or any other framework
- Botman with Regular Expressions
  https://botman.io/
  Lavaravel module - Open source - Works also in Symfony
  https://gist.github.com/fciacchi/30bcff6d77ff40ae811740efa338adf0
- Use Docker & Ngrok
  https://gist.github.com/fciacchi/0a85530efb0f05396c21778af22ff1cc
  https://ngrok.com/
  `$ ./ngrok http -subdomain=yousubdomain -region eu 192.168.99.100:80`
  http://localhost:4040

Conversations in PHP

- Then you can start grouping the intents and the conversations https://botman.io/2.0/conversations

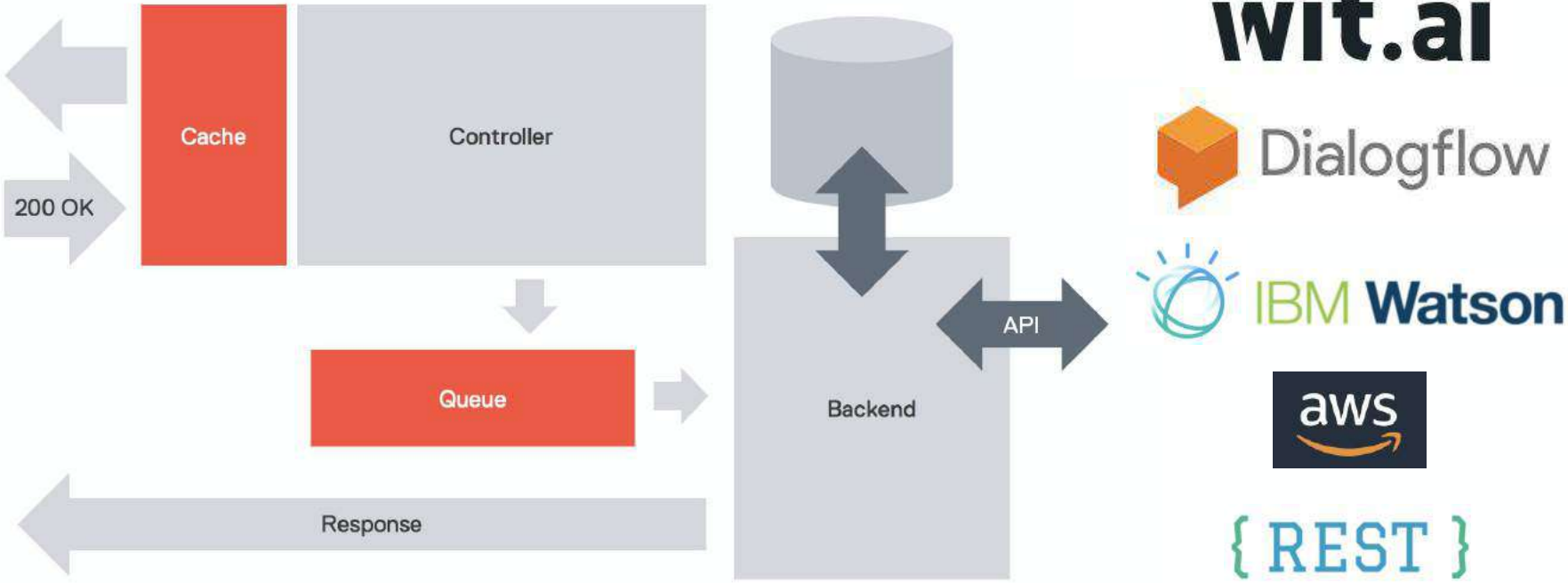
```php
$botman->hears('Hello', function($bot) {
    $bot->startConversation(new OnboardingConversation);
});
```



Let's take a look at the `OnboardingConversation` class:

```php
class OnboardingConversation extends Conversation
{
    protected $firstname;

    protected $email;

    public function askFirstname()
    {
        $this->ask('Hello! What is your firstname?', function(Answer $answer) {
            // Save result
            $this->firstname = $answer->getText();

            $this->say('Nice to meet you '.$this->firstname);
            $this->askEmail();
        });
    }

    public function askEmail()
    {
        $this->ask('One more thing - what is your email?', function(Answer $answer) {
            // Save result
            $this->email = $answer->getText();

            $this->say('Great - that is all we need, '.$this->firstname);
        });
    }

    public function run()
    {
        // This will be called immediately
        $this->askFirstname();
    }
}
```

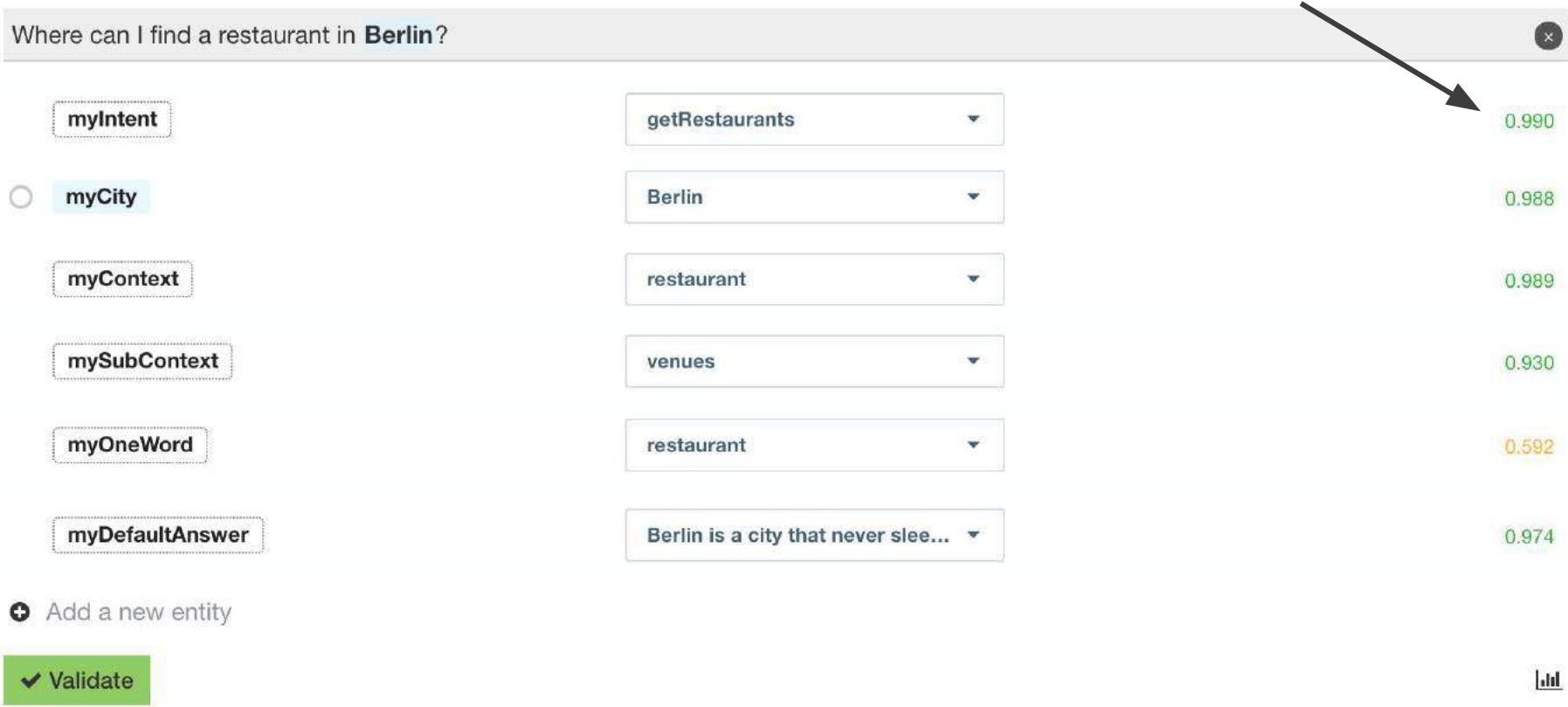
Backend Design



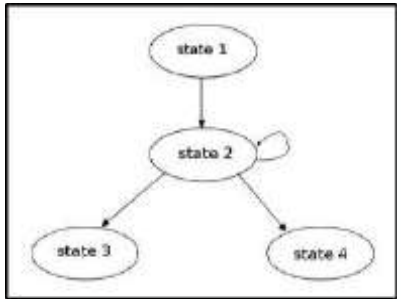
Build a Facebook Bot: https://blog.spryker.com/how-to-build-bot-5-steps

Wit.ai

CONFIDENCE



And a Conversation manager



We start with a
State machine

SESSION

Last Intent: getRestaurants
Context: context-2
Item selected: 3
Location: Berlin
Filter:
- type: sushi
- price: $$

navigation

Next
Previous
Last
….

context-1

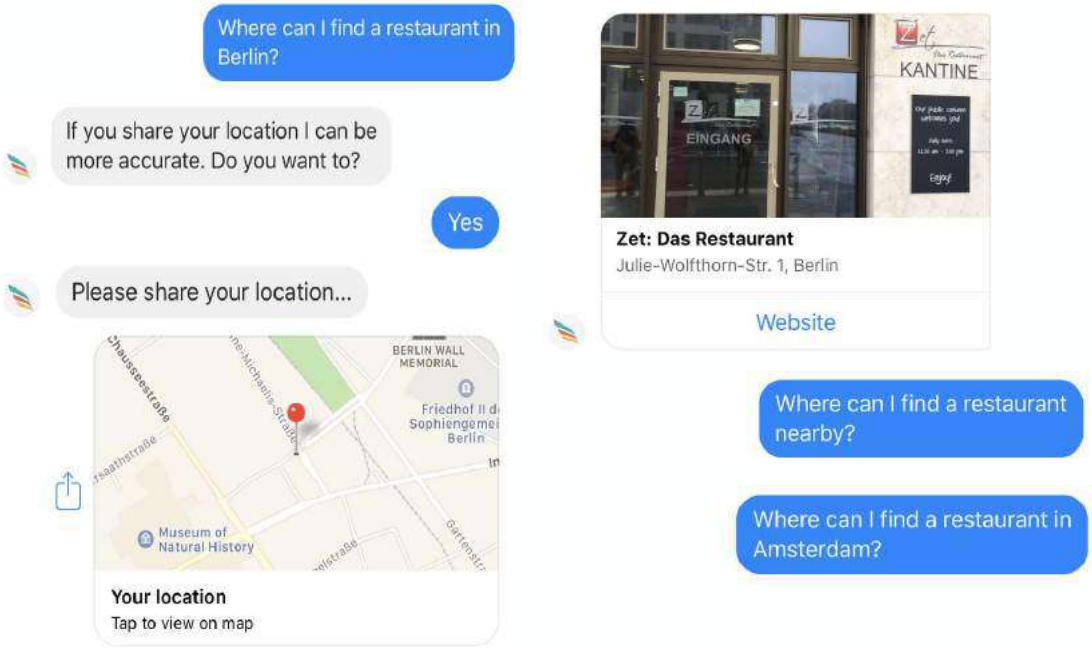
Intent xyv (sub: step 1)
Intent def (sub: step 2)
….

context-2

context-3

session

Example Location



SESSION

City: Berlin
Airport: TXL, SXF

Zip Code: 10117
Address: Friedrichstraße 43

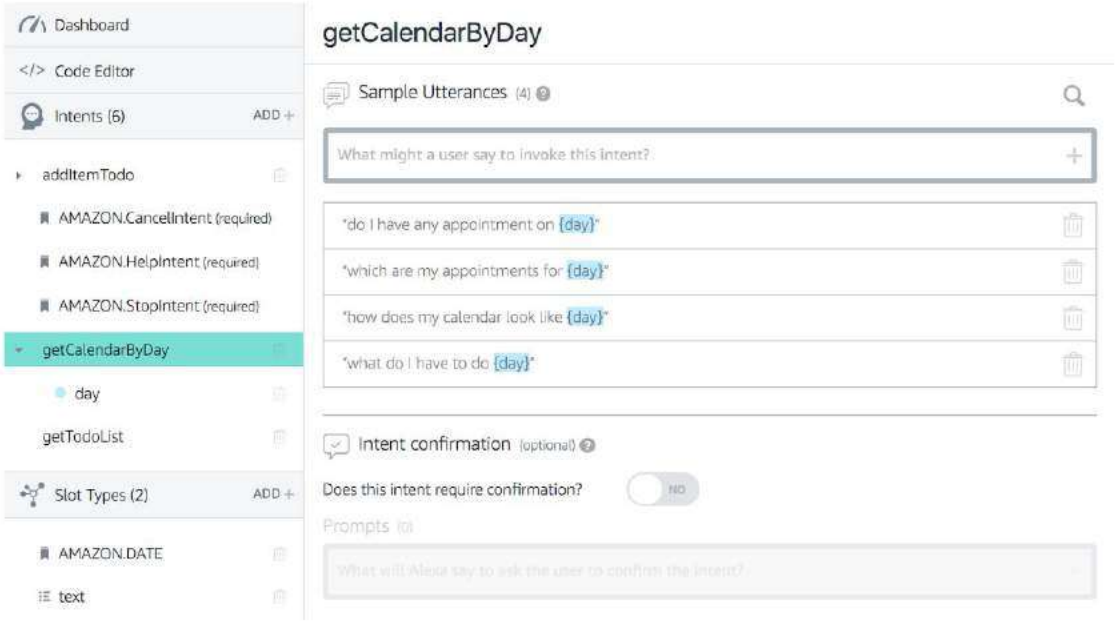
Lat: 52.520450
Lon: 13.407320

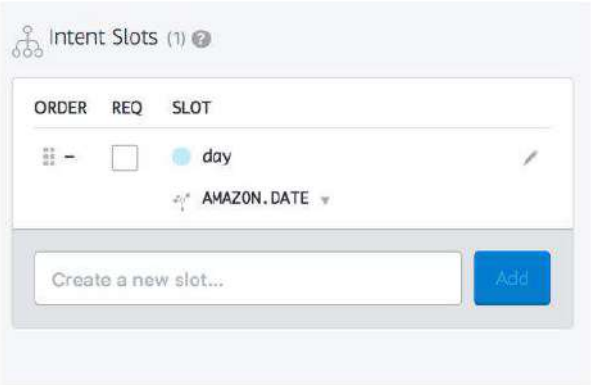
1d

3h

Speaking of Alexa

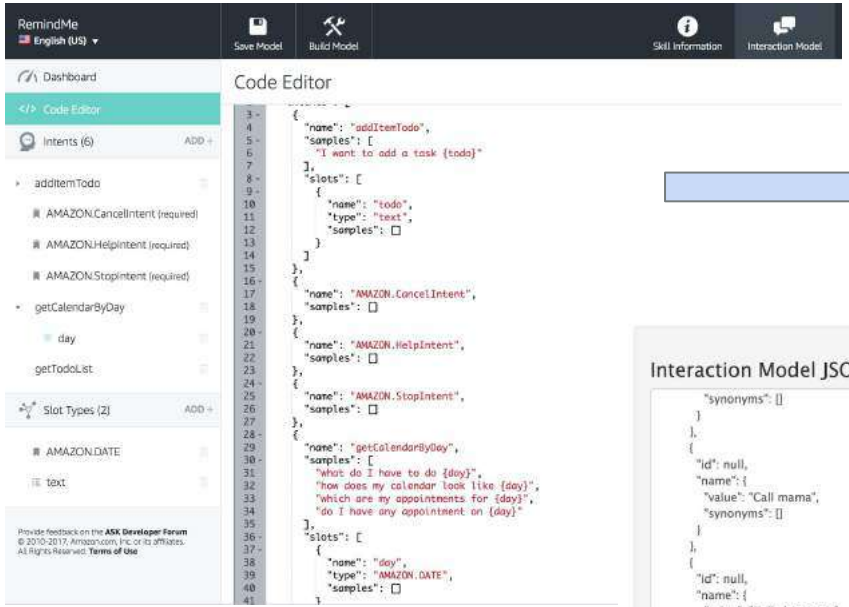
Alexa Skill creator



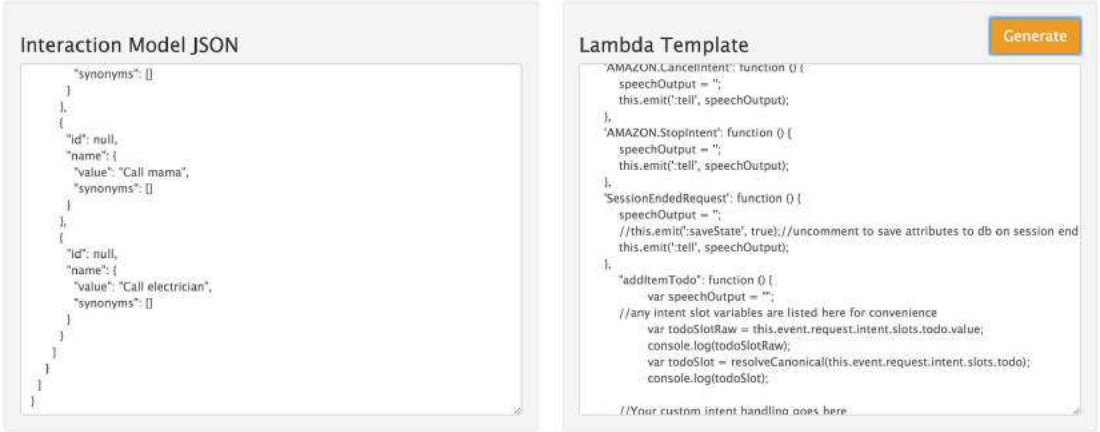


https://developer.amazon.com/designing-for-voice/

Get the Skill's JSON



https://skillinator.io/



NodeJS function 1/2

https://console..amazon.com/console/home

https://eu-west-1.console.aws.amazon.com/lambda/home?region=eu-west-1#

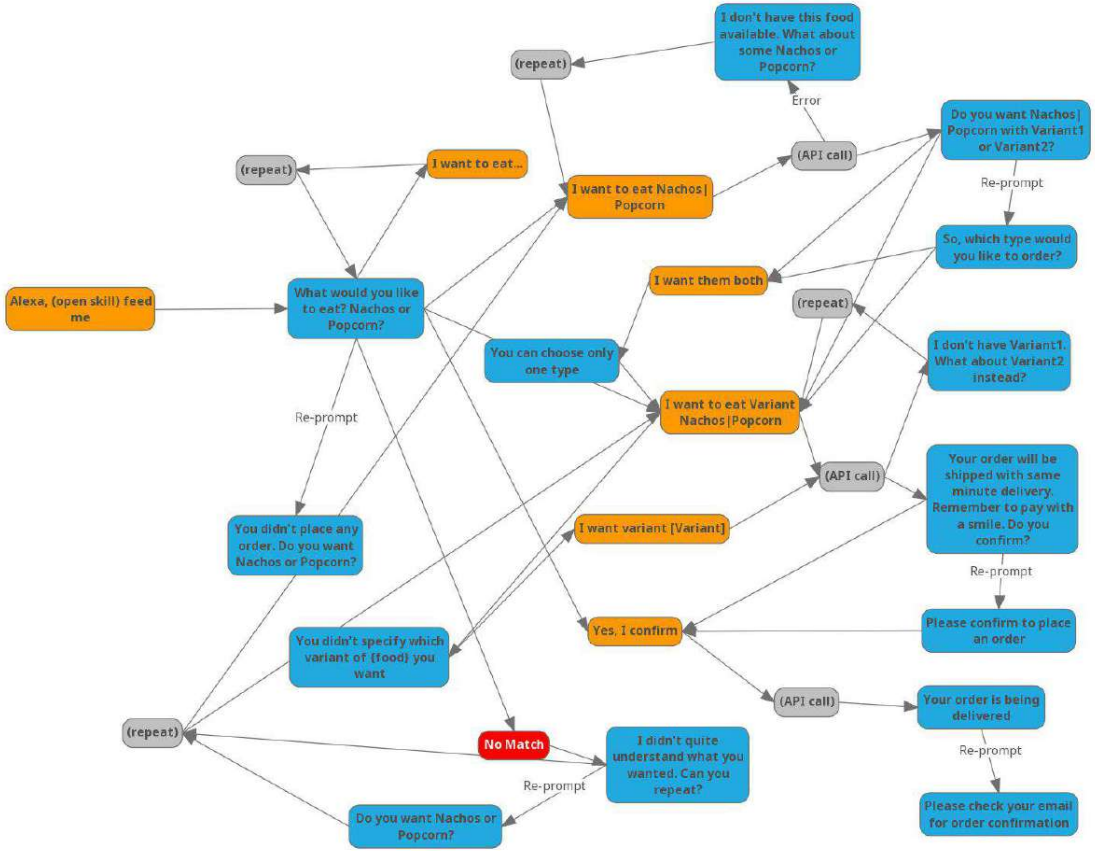
```
"getCalendarByDay": function () {
        var speechOutput = "I didn't understand. Can you repeat?";
        var self = this;
        var daySlotRaw = this.event.request.intent.slots.day.value;
        console.log(daySlotRaw);
        var daySlot = resolveCanonical(this.event.request.intent.slots.day);
        console.log(daySlot);

var url = 'https://flybybot.eu.ngrok.io/ikarus/alexa/calendar?day='+daySlot;
```

Lambda function 2/2

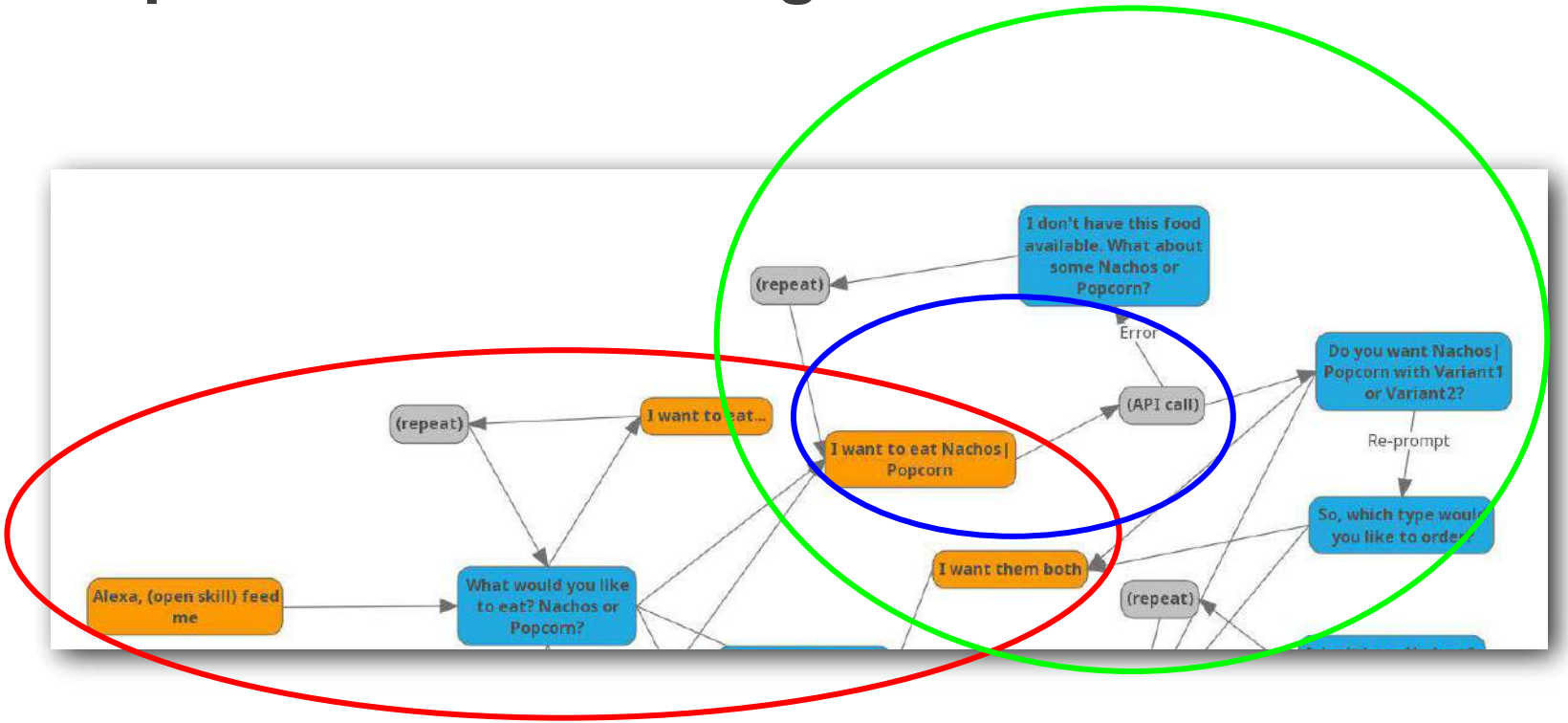
```
        ...
        https.get( url, function( response ) {

            var str = '';

            response.on('data', function (chunk) {
                str += chunk;
            });

            response.on('end', function () {
                jsonResponse = JSON.parse(str);
                console.log("RESPONSE ---> " + jsonResponse.response);
                self.emit(':ask', 'On ' + daySlot + ' ' + jsonResponse.response);
            } );
        } );
    },
```

Model: https://gist.github.com/fciacchi/61d42439f413d8faffd4a284b2aaee99
Lambda: https://gist.github.com/fciacchi/4415a55b3dbc5eeede3bdccf76fc663e

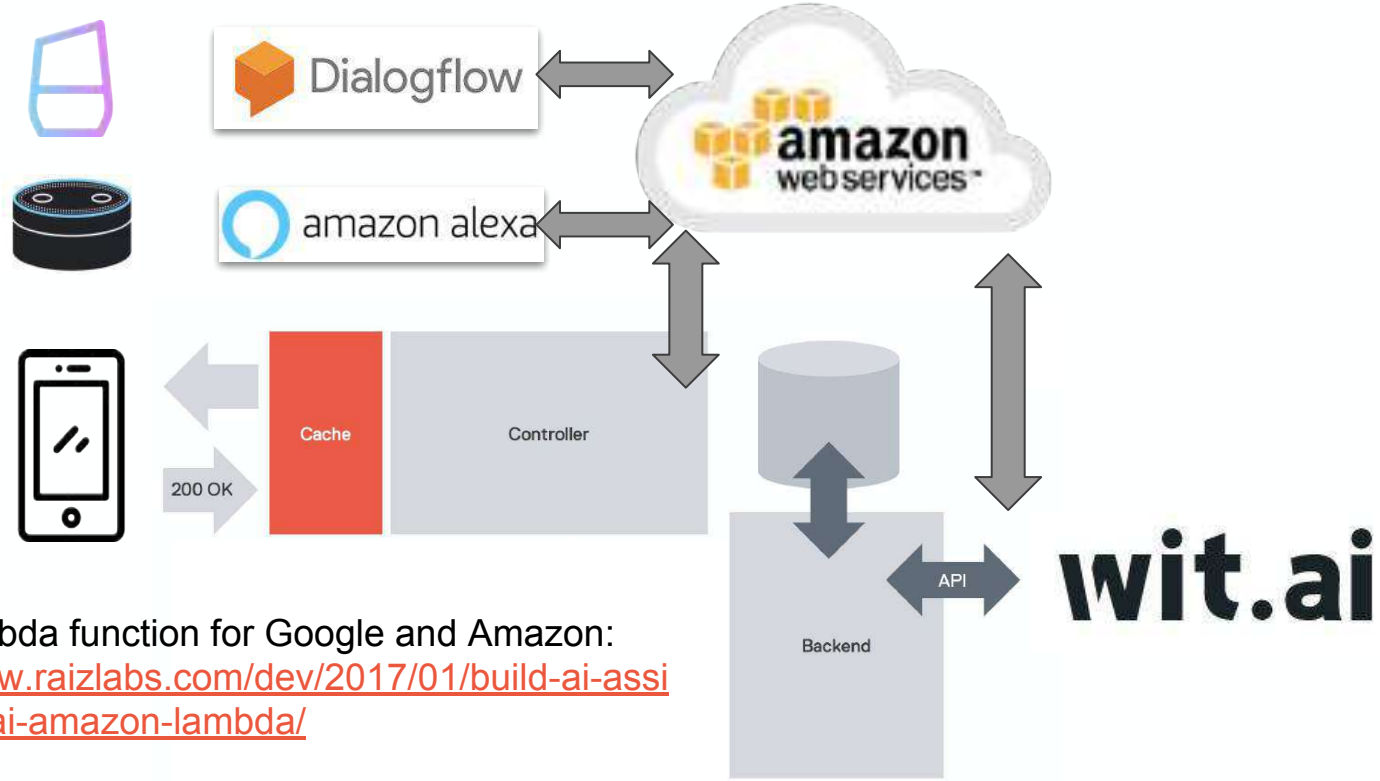
A simple Alexa skill dialog



A simple Alexa skill dialog



Design to a new level



Build Lambda function for Google and Amazon:
https://www.raizlabs.com/dev/2017/01/build-ai-assistant-api-ai-amazon-lambda/

API Design

Use HTTP verbs

- There are many HTTP verbs and you can apply them on both collections or elements. Make it simple and stick to it.

	Safe	Idempotent	Possible on	Success Response
GET	Yes	Yes	Collections Elements	200
POST	No	No	Collections*	201 + Location
PUT	No	Yes	Elements**	204
DELETE	No	Yes***	Elements**	204/404***

- HTTP verbs should be mapped 1-to-1 to CRUD operations. (but use encoded IDs/structure)

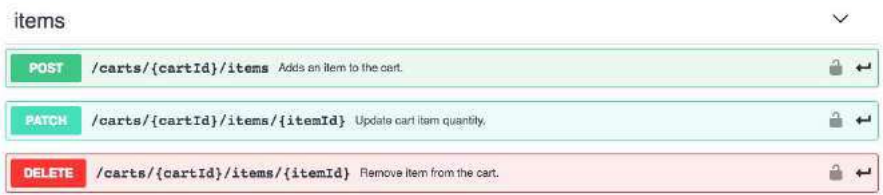
Operation	SQL	HTTP
Create	INSERT	POST
Read (Retrieve)	SELECT	GET
Update (Modify)	UPDATE	PUT
Delete (Destroy)	DELETE	DELETE

Use HTTP response codes

- There are many HTTP response codes, use it!
  - 200 (GET)
  - 201 + Location (POST)
  - 204 (PUT/DELETE)
  - 301 Moved Permanently
  - 404 Resource not found (/customers/5 -> does not exists)
  - 405 Method not allowed (should tell which verbs are allowed)
  - 409 Conflict (try to insert twice the same resource)
  - 415 Unsupported media type
  - 422 Unprocessable entity (wrong payload POST)
  - 500 Managed Exceptions

DDD Approach

- Use the 'Domain' definition as in the Domain Driven Design to define your API:
  - Customer is one domain
  - Wishlist is one domain
  - Cart is one domain



Interesting Reading:
https://herbertograca.com/2017/11/16/explicit-architecture-01-ddd-hexagonal-onion-clean-cqrs-how-i-put-it-all-together/

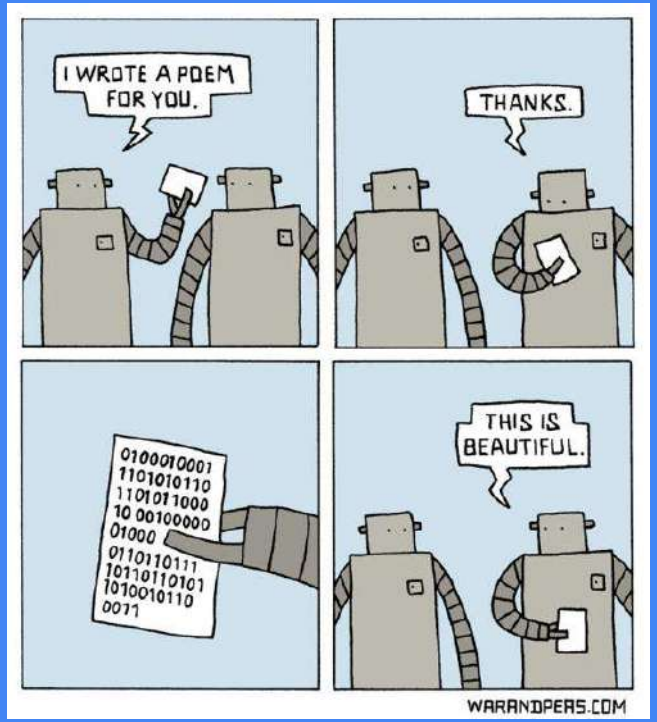
Why design good API?

30%

Saved in Wrong API Calls

- JSON API:
  http://jsonapi.org/
- JWT token:
  https://jwt.io/
- REST API Refactor:
  https://www.slideshare.net/ciacchi/rest-api-a-real-case-scenario
- Build REST API with Symfony:
  https://williamdurand.fr/2012/08/02/rest-apis-with-symfony2-the-right-way/

Design Tips


I WROTE A POEM FOR YOU.
THANKS.
0100010001
1101010110
1101011000
10 00100000
01000
0110110111
1011011010 1
1010010110
0011
THIS IS BEAUTIFUL.
WARANDPEAS.COM

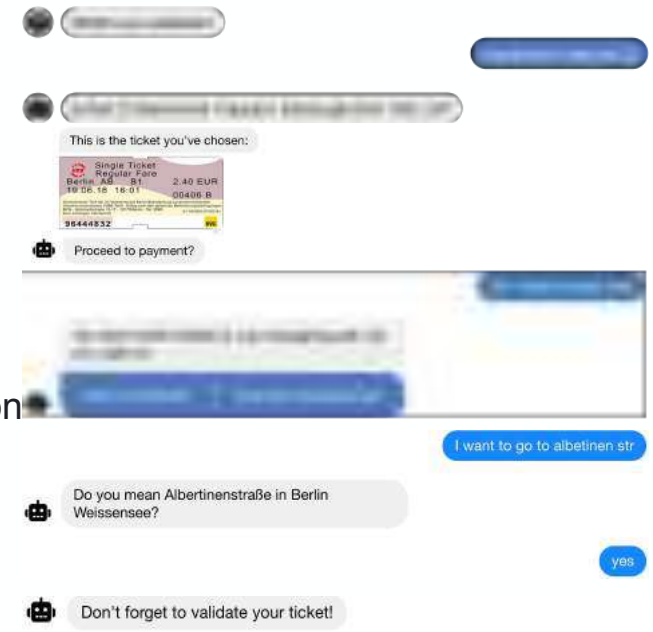
Design tips

Ulrike Eisengräber @ Rasa.com

http://blog.rasa.com/13-rules-for-cui-design/

- Rule n.3: Offer Informative Feedback.
- Rule 12: Make Use Of Familiar Concepts.
- Rule 8: Reduce Short-term Memory Load.
- Rule 5: Prevent Errors & Rule 11: Have A Fallback Option
- Rule 4: Design Dialogs To Provide Closure
- But you can also try new things...

When is the next train?
What time is my appointment?



VisualBots

	DROP
Welcome	
Question 1	-37%
Question 2	-4%
Question 3	0%
…	0%
Question 9	0%

Livio Marcheschi

https://www.visualbots.io/

Latest News

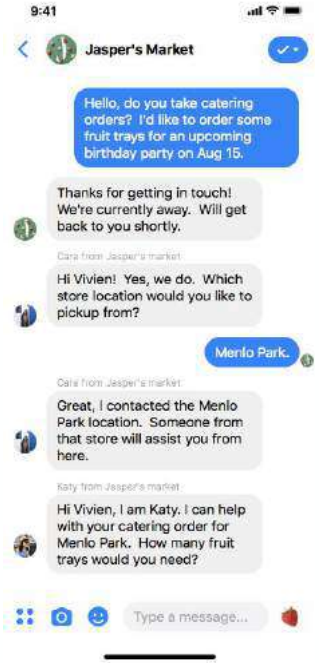
New Alexa Devices

https://techcrunch.com/2018/09/20/the-long-list-of-new-alexa-devices-amazon-announced-at-its-hardware-event/

Portal FB/Alexa

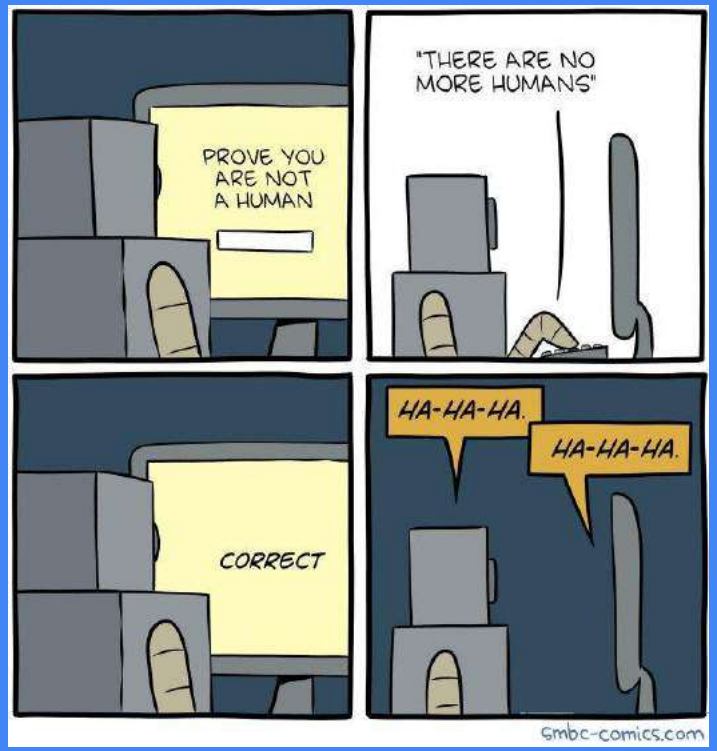
http://bit.ly/fb-portal-alexa

FB Mess. Personas

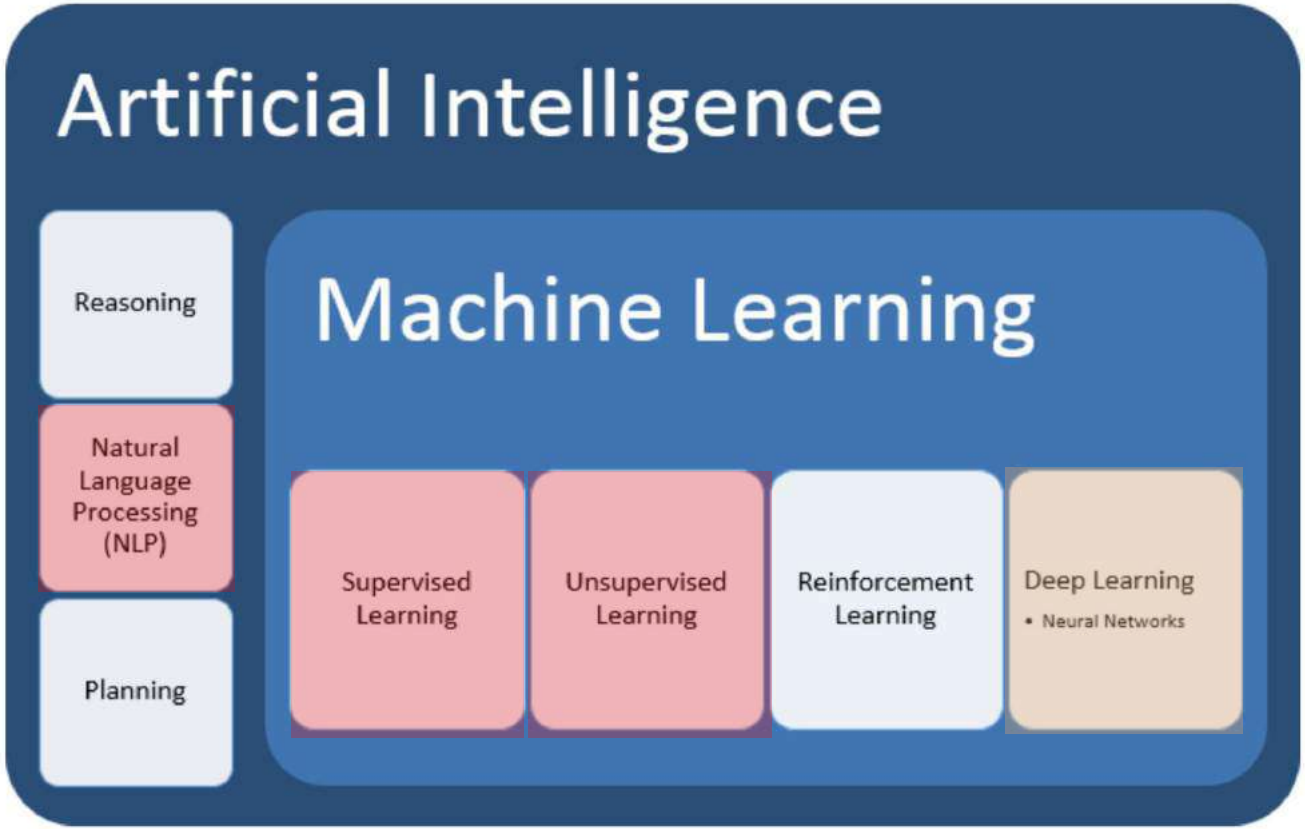


https://developers.facebook.com/docs/messenger-platform/send-messages/personas/

Machine Learning



Machine Learning

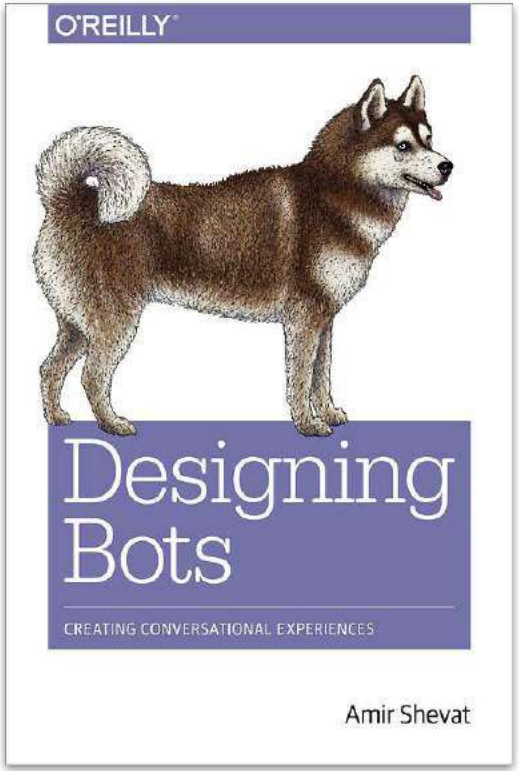


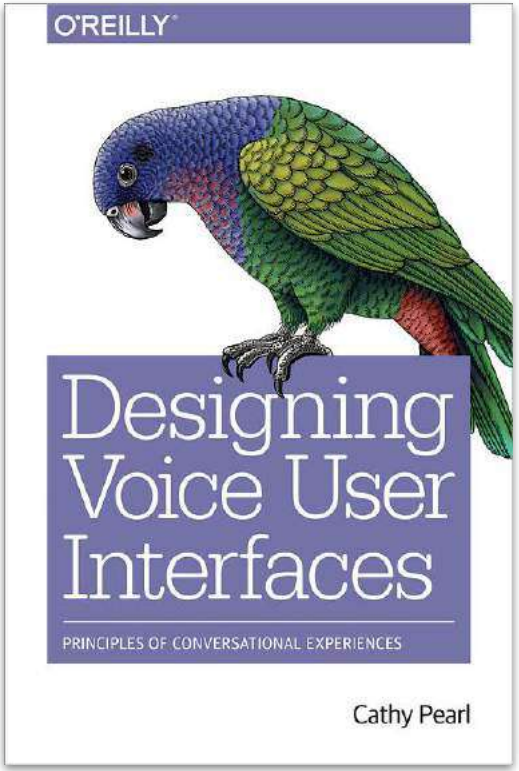
Machine Learning For Dummies, IBM Limited Edition

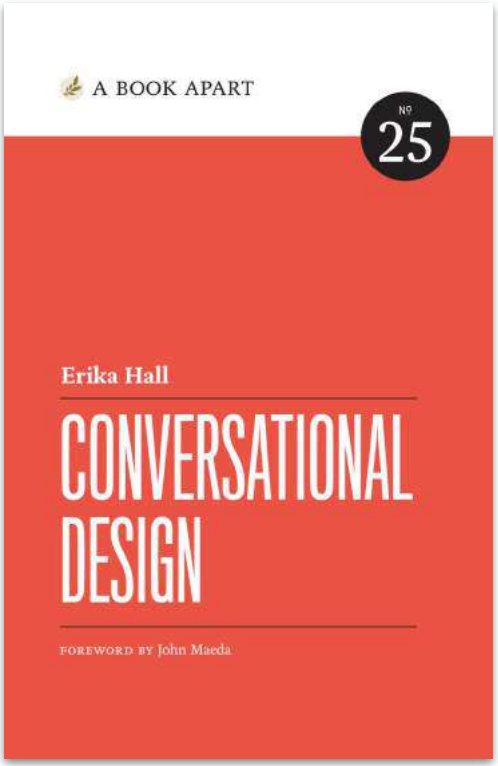
Links to Learn

- **Facebook Developer Circle**
  https://www.facebook.com/groups/DevCBerlin/
- **Session 1: Intro to Machine Learning**
  Wen-Ru Sheu / Backend Engineer @Visual Meta GmbH
  http://bit.ly/ml-session-1
  https://tinyurl.com/machinelearning-intro-1
- **Session 2: Neural Networks**
  Christopher Lennan / Senior Data Scientist @Idealo.de
  http://bit.ly/ml-session-2
  https://tinyurl.com/machinelearning-intro-2
- **Session 3: Natural Language Processing** (Lennan + Sheu)
  http://bit.ly/ml-session-3
  https://tinyurl.com/machinelearning-intro-3
- **ML 101:**
  http://bit.ly/machine-learning-101
- **Build Intelligent Bots in Python:**
  https://speakerdeck.com/kprzystalski/building-intelligent-bots-in-python
- **Start With NLP:**
  https://towardsdatascience.com/an-easy-introduction-to-natural-language-processing-b1e2801291c1

Books







- https://oreil.ly/2pDdHYH

https://oreil.ly/2G9ZR7d

http://bit.ly/2G7Ggo4

Some Examples

https://youtu.be/elqsMF2Bd4k

https://youtu.be/WLu6K8w8P1Q

https://youtu.be/O5Jz_67iN30

Beyond Web Interfaces

Fabrizio Ciacchi

Spryker

Thanks

http://ciacchi.it/CodeteCon-v4-2018-Ciacchi-Bot.pdf

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