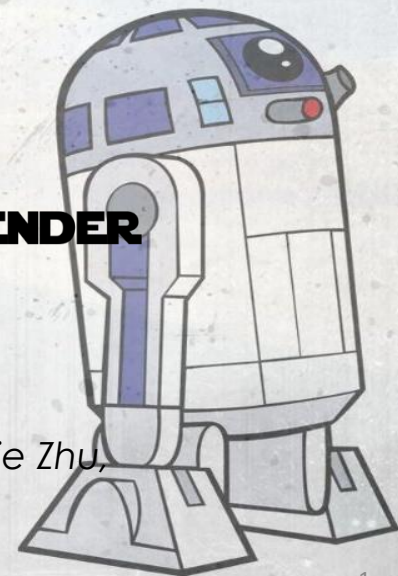


# MOS EISLEY CANTINA

**AN ALEXA BASED RESTAURANT RECOMMENDER**

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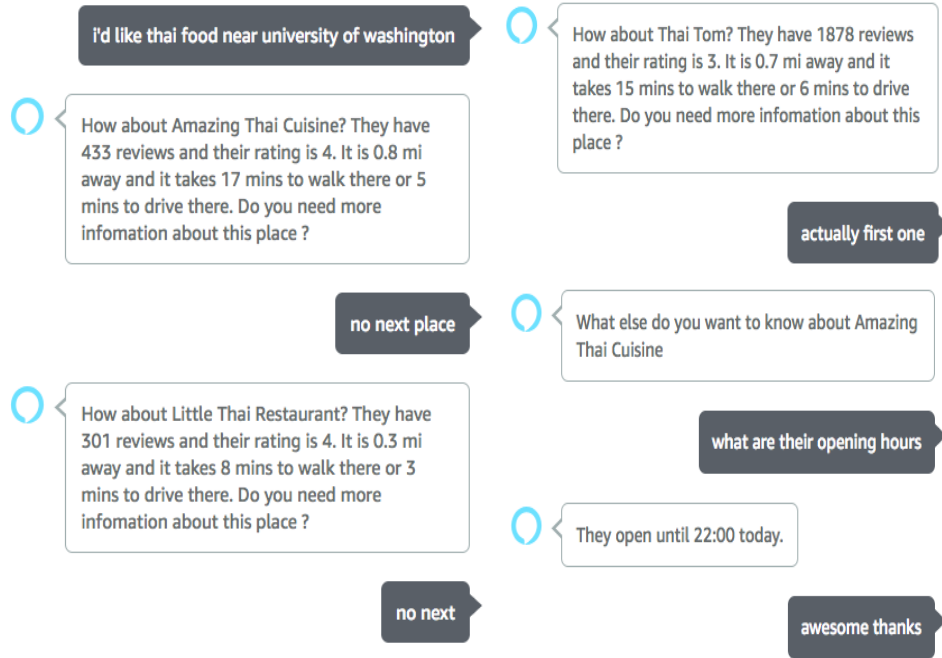
# MOTIVATION

Provide a means for Alexa-users to search for restaurant options from the comfort of their own home by giving the system a set of parameters verbally via their Alexa devices.

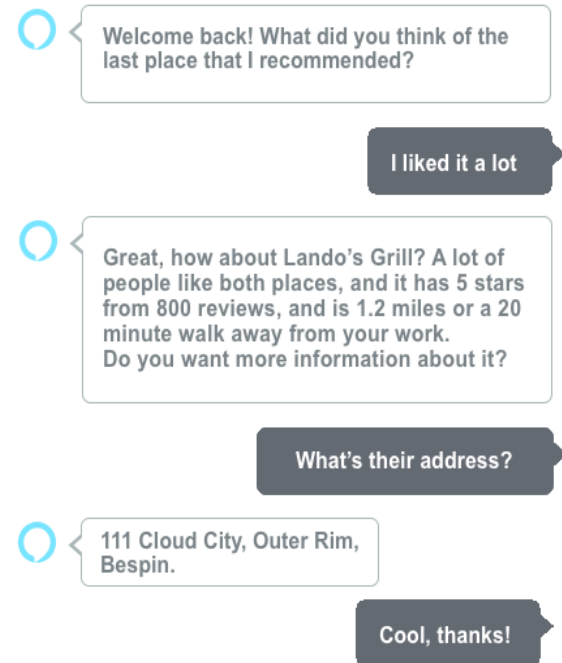
Leverage the social element of the chatbot medium by using information from previous conversations to make new and better recommendations.

# SAMPLE DIALOGS

## New User



## Returning User



# TARGET AUDIENCE

People at home with a device, in a relatively urban environment

- Unable or unwilling to open and manually filter Yelp to find food open now
- Planning a trip but not a local an area, in future
- Local to the area but planning something special for someone coming to visit, in future
- Planning something for groups, in future
- Busy and looking for a place to order takeout, now

# SYSTEM ARCHITECTURE

## ASR & TTS

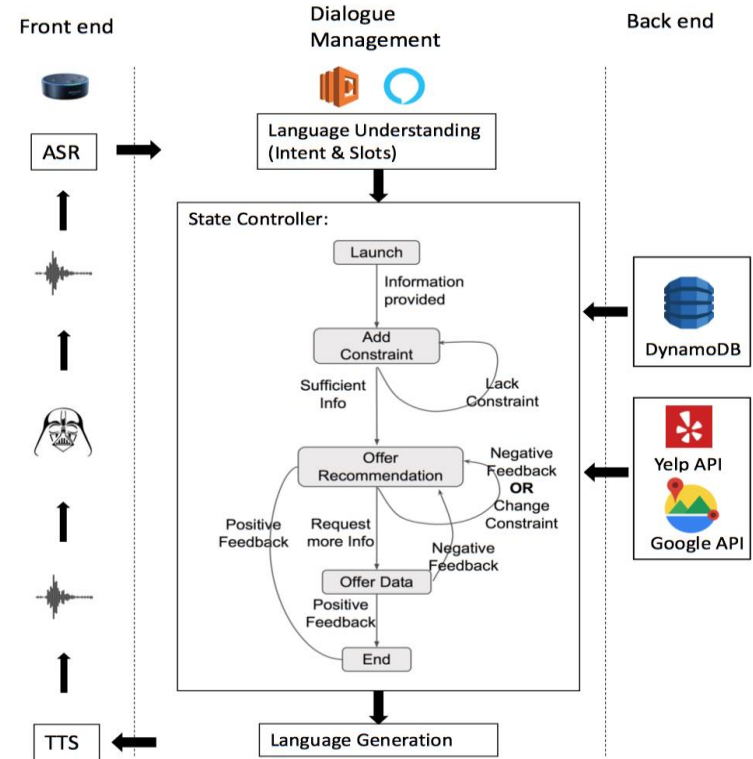
- Using Alexa Skill Kit

## Dialogue Management

- Alexa Skill Kit & AWS Lambda

## Database & API

- DynamoDB: store user information
- Yelp API: provide restaurant information
- Google Maps API: provide travel times



# DIALOG FLOW STATE MACHINE

**Launch:** Welcome to Mos Eisley Cantina. Looks like you're new. Let's set some default locations for looking up restaurants in future. You can set home and or work, by address, zip, or both.

**Secondary Launch:** Welcome back to Mos Eisley Cantina. How did you like our last recommendation

**Add Constraint:** Where would you like me to look? You can tell me the 5 digit zipcode or your address.

**Offer Recommendation:** Bahn Thai Restaurant may be a great choice for you. Their rating is 4 and they have 356 reviews. They have a moderate price. You can ask me to find a fancy one or ask me for more information about this place.

**Offer Data:** Their phone number is (206) 283-0444.

**End:** Thank you for trying the Mos Eisley Cantina. We hope you enjoy your meal. Be sure to tell us what you've thought of it next time we chat! Have a nice day!

# API'S

## Yelp Fusion:

- Parameters: *location, keyword, radius, price, open\_now, open\_at*
- Returns: *address, rate, opening\_hours, phone\_number, reviews*

## Google Maps:

- For transportation information
- returns the time for walking, driving and by bus

## DynamoDB:

- UserInfo: save user profile
- PreviousRecommendations: save previous recommendations

# EVALUATION METRICS

Evaluation for a social bot is complex - fewer turns isn't necessarily better (as with a goal-oriented bot).

## Metrics:

- Ratio: Success to Failure
- Ratio: Errors to number of turns
- Qualitative: Explicit user feedback on recommendation quality

*Success: exits only after being made recommendation*

*Errors: incorrectly recognized intents, unrecognized utterances, negative/frustrated user utterances*



# LIMITATIONS

Alexa Skills Kit works very well for adding light conversational functionality to an existing app. But for a full conversational bot:

- full utterance cannot be captured
- single word utterances (a very high % of our conversations) are unreliably recognized
- black-box Intent classification
- lack of debugging suite
- difficulties in sharing a codebase across accounts

# FUTURE WORK

- Confirmations: A/B testing on when it is helpful and when it is annoying to have confirmations, ex) “Your zip code is 98105, is that correct?”
- Proactive recommendations: leverage user behavioral similarity and platform trends to make recommendations *before* a user asks.
- Inferred constraints: if a user always wants *good for groups*, or *vegetarian*, or always like a certain type of restaurant, make recommendations without requiring user to explicitly state constraints

# DEMONSTRATION