Multi-domain Transactional Dialogues

CS294S/W Project Pitch

Multi-Domain Dialogues

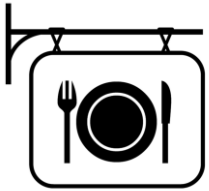
- Multiple domains *in the same conversation* (not just one after the other)
- Switching from one domain to the other, **and back**
- Passing data from one domain to the other
  - Example: book an hotel, then find a restaurant near the hotel

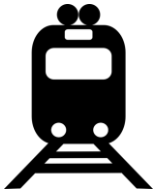
Background

- Closest related work: our own paper at ACL
  - https://oval.cs.stanford.edu/papers/multiwoz-acl2020.pdf
- Also related: *Alexa Conversations*
- Our goal:
  - **No annotated dialogues** - schema only (except validation)
  - **Domain-independent**, reusable dialogue models
  - Rich, **executable representation** to understand complex questions
  - Neural network fed **only the current state**, not the full history

Challenges

- Synthesizing “natural” domain-switches
- Identifying domain-switch in the neural model
- Parameter & coreference (“it”, “that”) ambiguity
- Formal representation for parameter passing
- Feeding the representation to the network





Setting

- MultiWOZ dialogue state tracking benchmark
  - Human-human (Wizard of Oz) conversations
  - DST annotations (domain + slots)
  - Not accurate & not sufficient -- must reannotate with ThingTalk
- About 10k dialogues total
  - 1000 dev dialogues & 1000 test dialogues are what we care about
- 5 domains
  - In each domain, 50 single-domain dev dialogues
  - The rest (750 dialogues) is multiple domain

High-level ToDo list

High chance of EMNLP submission
(June 1st)

- Choose restaurant + other domain (hotel? taxi?)
- Prepare the skill for the other domain
- Annotate dev+test set for other domain
  - Ideally, everything
  - In practice, however much we can
- Write domain-switch templates
- **Experiment:** compare multi-domain dialogue with naive concat/mix of single-domain dialogues
- **Experiment:** compare feeding formal representation vs full history