Amazon’s Alexa Prize
Socialbot Grand Challenge 4

team Viola (USC)

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03/16/2021
Overview

• Global competition for conversational AI

• socialbot = engages in a conversation about popular topics
  • i.e., entertainment, sports, politics, technology, and fashion

• Areas of work:
  • knowledge acquisition
  • NLU / NLG
  • context modeling
  • commonsense reasoning
  • dialog planning

• Research grants, Alexa-enabled devices, Amazon Web Services
Overview

• Goal (Grand Prize):
  • Build a social bot that users talk to for 20+ minutes for \( \frac{2}{3} \) conversations and get an average rating of 4.0+/5

• Last competition’s winner: Emory’s Emora
  • Average conversation time: about 7+ minutes
  • Average rating: about 3.8

• Where we are:
  • Median conversation time: about 1:51
  • Last 7 days average rating: 3.21 (production) / 3.24 (A/B testing)
  • Ranging from 5th to 8th place out of 9 teams (5 teams are returning teams)
## Overview

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<td>October 23, 2020 at 11:59 PM PT</td>
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<td>PHASE 2: Sponsor Application Review Period</td>
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<td>PHASE 3: Participant Notification Period/Onboarding</td>
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Overview

Pros

• System that will be deployed to real customers
• Large volume of real customer conversations and also real customer feedback/ratings
• Support and resources from Amazon for getting started

Cons

• Primary focus is on engineering & software development for the earlier phases of the competition
• Strict rules
  • e.g. sensitive response generation
• Limits on using the dialogue data collected from the Alexa Prize outside of the competition
Overview

Our team:

• Faculty advisor:
  • Prof. Jonathan May

• PhD students
  • Justin Cho
  • Basel Shbita
  • Kushal Chawla

• Master’s students
  • Suji Kim
  • Wonhyuk Jang
  • Kartik Shenoy
  • Shuai Liu

• Undergraduate students
  • Jennifer Lee
  • Ryan Wei
Resources

• AWS

• Cobot (Conversational Bot) SDK
  • Set of tools, libraries and components designed to make developing, training and deploying open-domain or multi-domain conversational agents

• Custom ASR for dialogue + BERT-based punctuation model

• CAPC (Common Alexa Prize Chats) dataset:
  • anonymized common chats (individual dialog turns), aggregated across all Alexa Prize interactions to capture frequently discussed topics

• Topical Chat dataset
  • dialog dataset grounded in topical knowledge with baseline response generator models (state-of-the-art performance on the dataset)

• Other annotations
  • transcriptions of freeform user feedback at the end of conversations with the team's socialbot
Viola bot – overview
Viola bot – overview
Viola bot – Viola Internal KG (VIKG)

- Updated daily
  - Reddit, IMDB, Washington Post
- Cleanup & filtering
  - sensitive comments
  - sensitive topics
- NER (BERT)
- Topic classification
Viola bot – domain specific FSMs

• Currently tackle the domains:
  • Movies, Music, Sports
• Pre-defined templates
• Integration with VIKG
Viola bot – Spolin bot

• Models improvisational dialogue between two actors
• Fine-tuned DialoGPT model
  • with corpus of "yes, and" dialogue pairs
Challenges

• Speech-based conversation different from text-based conversations
• FSMs don’t scale well
• Knowledge-grounded response generation
• Consistency
• Frequent topic-switching
  • e.g. “what movie do you like?” → “harry potter” → “cool! I like that movie too. do you like going outdoors?”
Plans and Ideas

• Continuous learning
  • Retrain DialoGPT-Alexa bot with 4.0+ rated conversations (already 5,000+ conversations)
• Approach by Korean chatbot Iruda
• Task-oriented dialogue approach for personalization by slot filling of user information
• Knowledge graph traversals
  • stay on topic/in context
• Commonsense
  • ConceptNet