

AMOGH MANNEKOTE

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RESEARCH SUMMARY

Commercially-motivated "task-oriented" and "chitchat" **dialogue systems** such as virtual assistants and customer service bots are all around us and are more powerful than ever thanks to LLMs. However, advances in LLM-based dialogue systems are yet to translate into **educational dialogue**, **negotiation**, **collaboration**, and so on. I collectively term such paradigms under the umbrella of the **"Long Tail" of dialogue systems**. My research interests touch upon **ML**, **NLP**, as well as **HCI issues** surrounding the **authorship**, **bootstrapping**, **crowdsourcing**, **synthetic data generation**, and **evaluation** of such Long Tail Dialogue Systems.

EDUCATION

University of Florida	Gainesville, FL
PhD in Computer Science (Dialogue Systems & HCI)	01/2021 - Present
Ramaiah Institute of Technology	Bengaluru, India
B.E. in Computer Science & Engineering	08/2014 - 08/2018

PUBLICATIONS AND PREPRINTS

1. **Amogh Mannekote**, X. Tian, K.E. Boyer, and B. Dorr (2024). [Can Similarity-Based Domain-Ordering Reduce Catastrophic Forgetting for Intent Recognition?](#) (arXiv:2402.14155)
2. **Amogh Mannekote**, M. Celepkolu, J.B. Wiggins, and K.E. Boyer. 2023. [Exploring Usability Issues in Instruction-Based and Schema-Based Authoring of Task-Oriented Dialogue Agents](#). *In ACM conference on Conversational User Interfaces (CUI '23)*.
3. **Amogh Mannekote**, B. Dorr, K.E. Boyer (2023). [Agreement Tracking for Multi-Issue Negotiation Dialogues](#) (arXiv:2307.06524)
4. **Amogh Mannekote** (2023). [Towards a Neural Era in Dialogue Management for Collaboration: A Literature Survey](#) (arXiv:2307.09021)
5. **Amogh Mannekote**, M. Celepkolu, A. Galdo, K.E. Boyer, M. Israel, S. Heckman, K. Stephens-Martinez. [Don't Just Paste Your Stacktrace: Shaping Discussion Forums in Introductory CS Courses](#). *In SIGCSE 2022: Proceedings of the 53rd ACM Technical Symposium on Computer Science Education*.

WORK EXPERIENCE

Openstream.ai	Remote
<i>Research Intern</i>	09/2023 - 12/2023

- Developed a LangChain-based evaluation pipeline for semantic parsing

Amazon Alexa	Bellevue, WA
<i>Research Intern</i>	05/2023 - 09/2023

- Developed a pipeline for synthetically generating indirect utterances in task-oriented dialogue using linguistic attributes

University of Florida	Gainesville, FL
<i>Graduate Research Assistant</i>	01/2021 - Present

- Developed a novel text clustering model to help instructors of undergraduate CS courses analyze student questions on discussion forums (e.g., Piazza) by fine-tuning S-BERT over a dataset of StackOverflow questions. The resulting model outperformed multiple competitive semantic similarity methods on both intrinsic and extrinsic criteria.
- Developed a conversational learning partner that would reside within [EarSketch](#). EarSketch is a web-based learning environment that helps high-school learners learn programming through music remixing ([NSF DRL-1813740](#))

Fractal Analytics & Crux Intelligence	Bengaluru, India
<i>Data Scientist</i>	01/2020 - 11/2020

- Brought down the time-to-release of Crux’s platform from one day to a few minutes by implementing an end-to-end evaluation framework for Text-to-SQL Semantic Parsing.

Rasa

Machine Learning Solutions Architect

Berlin, Germany

06/2019 - 11/2019

- Developed Conversational AI solutions for enterprise clients across healthcare, automotive, insurance, and retail industries.
- Contributed to Rasa’s open-source natural language understanding (NLU) and dialogue management modules.

Indian Institute of Science

Research Assistant

Bengaluru, India

07/2018 - 06/2019

- Extensively studied and evaluated various state-of-the-art approaches to Visual SLAM with sensor fusion in challenging outdoor environments
- Improved the accuracy of a extrinsic calibration system that was based on Perspective-n-Point (PnP) by introducing a Grid Search step over the pixel-space of the images

IBM

Intern - Watson Machine Learning Team

Bengaluru, India

04/2018 - 06/2018

- Worked on the serving infrastructure for TensorFlow, Keras, and PyTorch models on IBM Watson’s ML platform

Stride.AI

Research Intern

Bengaluru, India

02/2017 - 02/2018

- Designed a multi-turn conversational information-retrieval agent for a Fortune 500 organization to automate searching through their database for employees matching relevant skills
- Evaluated various approaches such as topic extraction, semantic similarity, text similarity, Doc2Vec, and Siamese networks.

Indian Institute of Science (Dept. of CSA)

Intern at the Game Theory Lab

Bengaluru, India

06/2017 - 08/2017

- Simulated prediction markets using sentiment analysis of news sources

SELECT PROJECTS

LLM4Qual LLM4Qual is a unified library that combines the standardization of HuggingFace Datasets with the power of LangChain to act as a stand-in for human annotators in text-annotation tasks. By leveraging LLMs, LLM4Qual provides a sophisticated and automated approach to evaluating qualitative data across multiple dimensions. This project is targeted at resource-poor academic laboratories that cannot afford expensive proprietary subscriptions and for developers handling sensitive data.

MultiWOZ-Gaze Although eye-gaze has been used extensively in NLP, it is underexplored in the context of dialogue corpora. This proof-of-concept demonstrates the feasibility of using inexpensive eye-tracking equipment to derive key insights about the MultiWOZ corpus of task-oriented dialogue.

Nonechucks An open-source library that provides wrappers around PyTorch’s DataLoaders to allow for seamless handling of invalid or unwanted data samples in messy, real-world ML data pipelines (featured on GitHub’s Trending Python Repositories).

Rasa-FRAMES A proof-of-concept fork of Rasa Core that supports handling of more than one dialogue “frame” (inspired by the Microsoft FRAMES dataset)

SKILLS

Programming	Python, Java, Javascript, TypeScript, Erlang, SQL, L ^A T _E X
Machine Learning	PyTorch, TensorFlow, Keras, NumPy, Pandas, scikit-learn, Matplotlib, WandB
NLP	HuggingFace Transformers, spaCy, NLTK, Amazon Lex, Rasa
Infrastructure	AWS, GCP, SLURM, Kubernetes, Docker, Git, Bash
Web Technologies	ReactJS, HTML, Angular, MVC, Flask, NodeJS, CSS

TALKS & PODCASTS

Guest Speaker on the CS-Ed Podcast	On the use of discussion forums in CS1/2 classrooms [Link]
Building a Chatbot with Rasa	Delivered at Ramaiah Institute of Technology [Link]

ACADEMIC AWARDS & FELLOWSHIPS

Graduate Fellowship, 2022
Student Travel Grant, 2019

Awarded by the Dept. of CISE at University of Florida
For attending CoDS-COMAD 2019

NATURAL LANGUAGES

English (native) · Kannada (native) · Hindi (working)