Uma Sushmitha Gunturi

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Education

Virginia Tech — Blacksburg, VA, USA
Master of Science in Computer Science (Thesis), 4.0 GPA — *Aug. 2021 – Present*
Advisor: *Dr. Eugenia H. Rho*
Thesis Committee: *Dr. Eugenia H. Rho (Chair), Dr. Ismini Lourentzou, Dr. Edward Fox*
Thesis Title: *Towards Social Technologies for Understanding and Responding to Online Racial Microaggressions*

Bennett University — Greater Noida, India
Bachelor of Technology in Computer Science, 9.02 CGPA — *Aug. 2017 – May 2021*

Research Interests

Natural Language Processing (NLP), Human Computer Interaction (HCI), Computer-supported cooperative work (CSCW), Conversational AI, Social computing, Computational Social Science, Behavioral Analysis, Machine Learning

Publications

Laiba Mehnaz*, Debanjan Mahata*, **Uma Sushmitha Gunturi***, Amardeep Kumar*, Rakesh Gosangi, Riya Jain, Gauri Gupta, Isabelle Lee, Anish Acharya, Rajiv Ratn Shah. GupShup: Summarizing Open-Domain Code-Switched Conversations. *Proceedings of the 2021 Conference on Empirical Methods in Natural Language Processing**(EMNLP 2021)***. [Data and Models] *Equal contribution ***[Accepted]***

Uma Sushmitha Gunturi*, Anisha Kumar, Xiaohan Ding, Eugenia Rho. Black people of reddit, why do you name your kids funny names?": Understanding the Linguistic Signature of Acts and Recalls of Racial Microaggressions on Social Media *The ACM Conference on Human Factors in Computing Systems* ***(CHI 2023)[Under Review]***

Uma Sushmitha Gunturi*, Anisha Kumar, Xiaohan Ding, Eugenia Rho.Counter Response Online Suggestion System (CROSS): Leveraging Linguistic Artificial Intelligence to Help Users Counter Gray Areas of Online Toxicity.*Proceedings of the 2023 Conference of the North American Chapter of the Association for Computational Linguistics* ***(NAACL-HLT 2023)[In Preparation]***

Experience

Research Intern — May. 2022 – Aug. 2022
IBM Research AI, Foundations of AI Reasoning Group — *Yorktown Heights, NY, USA*
Advisors: Tengfei Ma and Achille Fokoue

- Working in the Knowledge Reasoning Team on building Neuro-Symbolic Time Series Classification models leveraging signal temporal logics (STL). This project aims to improve the interpretability of RNNs by assigning an STL formula describing how data evolves over time as a classifier for a data class. We test NSTSC on real-world datasets and benchmark datasets from the UCR time-series repository, demonstrating that NSTSC achieves comparable performance compared to state-of-the-art models. This project is funded by the Bioelectronics for Tissue Regeneration (BETR) program of DARPA.

Graduate Student Researcher — Aug. 2021 – Present
SAIL Society +AI & Language Lab , Virginia Tech — *Blacksburg, VA, USA*
Advisor: Dr. Eugenia H. Rho

- Examined the linguistic signature of online racial microaggressions (acts) and how it differs from that of personal narratives recalling experiences of such aggressions (recalls) by Black social media users. We manually curate and annotate a corpus of acts and recalls from in-the-wild social media discussions, and verify labels with Black workshop participants. We leverage NLP and discourse analysis on this data to classify, interpret, and characterize the language underlying acts and recalls of racial microaggressions in the context of racism in the U.S. providing

broader implications to the current challenges in content moderation systems on social media. ***[Under Review CHI 2023.]***

- Developing a computational framework to predict, analyze, and evaluate the efficacy of counter responses responding to a broad spectrum of online aggressions by the type, topic, and level of aggression using both in-the-wild counter responses from social media and counter responses written by crowd workers. Designing language generation approaches that will provide users with contextualized examples of machine-generated counter responses against a specific instance of online aggression encountered by the user. Compare the efficacy of human vs. machine-written counter responses to online racial microaggressions to understand the viability of linguistic AI in combating online racial microaggressions. ***[In Preparation NAACL 2023.]***

Graduate Teaching Assistant Aug. 2021 – Present
Virginia Tech *Blacksburg, VA, USA*
Instructor: Prof. Margaret Ellis

- Working with a staff of 20 TAs for the course *CS2114 (Software Design and Data Structures) to teach 400+ students where I review, conduct and grade lab sessions to help students apply fundamental object-oriented concepts.*
- Responsible for holding office hours to answer any questions students have regarding coursework.
- Debug programming assignments and projects written by students in Java.
- Responsible for grading student homework and projects for over 5+ hours each week.

Research Intern Apr. 2020 – Present
MIDAS LAB at Indraprastha Institute of Information Technology IIIT Delhi *New Delhi, India*
Advisors: Dr. Debanjan Mahata and Dr. Rajiv Ratn Shah

- Worked on building a Hindi-English Code-Mixed conversations corpus called 'GupShup'. My work involved developing a python framework for language identification and computing the several metrics for quantifying the complexity of code-switching. ***Led to publication at EMNLP 2021.***
- Ran pre-trained transformer models such as BART, mBART, T5, mBERT2mBERT, Pegasus for generating English-English, Hinglish-English and Hinglish-Hinglish summarization results.
- Also worked on building a social role model framework for users facing mental health issues due to COVID-19 pandemic using unsupervised machine learning models such as GMM and K-Means. This framework is used for facilitating community level participation and improving user engagements by recommending specific functional roles.

Visiting Research Student May 2019 – Aug. 2019
Georgia Institute of Technology *Atlanta, GA*
Advisors: Dr. Devi Parikh and Dr. Dhruv Batra.

- Reproduced a research project in the area of Visual Question Answering at Visual Intelligence Laboratory.
- Implemented the research paper *Analyzing the behavior of Visual Question Answering Models* on the current state of the art model 'Pythia' to analyze various biases the older models suffer from.

Visiting Research Scholar June 2018 – July 2018
Georgia Institute of Technology *Atlanta, GA*
Advisor: Dr. Xu Chu

- Worked on a project 'CodeML: Composing and Debugging ML Workflow' as a part of an observational program in the field of Machine Learning Interpretability.
- Built a python framework to understand and interpret decisions made by various black box ML models. This tool can be used to assist users in explaining and analysing various machine learning models.

Technical Skills

Technical Languages: Java, Python, C/C++, SQL, HTML/CSS, MIPS
Developer Tools: Git, Google Cloud Platform, VS Code, Eclipse, Android Studio, Flask, FireBase
Libraries: Pandas, NumPy, Gensim, Matplotlib, OpenCV, Keras, Tensorflow, PyTorch, SpaCy, Sci-Kit, TextBlob, NLTK, HuggingFace
Languages: English, Hindi, Telugu, Tamil (basic)