Uma Sushmitha Gunturi

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EDUCATION

Virginia Tech   Blacksburg, VA, USA
Master of Science in Computer Science   *Aug. 2021 – Present*

Research Interests: Natural Language Processing (NLP), Human Computer Interaction (HCI), Social Bias, Fairness, Psycholinguistics

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

Sri Chaitanya Vidya Niketan   Vishakapatnam, India
Intermediate, 97%   *Aug. 2015 – May 2017*

EXPERIENCE

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

- Working on identifying Groupthink Language: This project investigates communicative patterns of groupthink in online content, specifically around topics that are wrought with misinformation and partisan assumptions. Currently, we're examining language symptomatic of groupthink in the context of resisting COVID-19 health mandates by using NLP and audio processing to analyze textual and audio data from video posts on TikTok, Instagram, Facebook, and Youtube.
- Working on understanding semantic change of race words across time: This project examines how news coverage of important social topics such as 'race' has evolved over time by analyzing news articles using SOTA language models. This project is based on a partnership with the Internet Archive. *In progress, to be submitted to CSCW 2022.*

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.

Research Intern   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 an ML tool to understand decisions made by various black box models. This tool can be used to assist users in explaining and analysing various machine learning models.

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]*

PROJECTS

Detection of Propaganda Techniques in News Articles | *Python, TensorFlow*

- Replicated the research paper[1] to accurately classify articles that are 'Propagandistic' or not 'Propagandistic' using transformer-based RoBERTa model under the guidance of Dr. Vipul Kumar Mishra.
- Experimented with SemEval 2020 news articles corpus and achieved an F1 score of 0.75 which exceeded baseline works on the dataset.

Monitoring Elderly Living Alone | *Python, OpenCV, TensorFlow*

- Worked on developing a fall detection system for remotely determining the functional health status of an elderly person using Background Subtraction and Time Frame analysis. This system could passively observe interactions between elderly people and their living environment over a long time.
- Experimented with several image classification models in the emerging research field of image and video analysis. Worked under the supervision of Dr.K.K.Biswas Professor(Retd.), IIT Delhi.

Mind Space | *Java, Android, FireBase*

- Developed an Android App for improving mental health and well being using FireBase.
- This App is a simple personal guide to mental health with features that helps provide necessary information about MH disorders and personal assistance from an expert psychiatrist.

Image Classifier using Data Augmentation | *Python, OpenCV, TensorFlow*

- Created a customized object detection model for visually impaired persons which is light weighted with the help of CNNs. Used data augmentation to generate a large number of synthetic images from a single image.

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

VOLUNTEERING

Fundraising Intern Apr. 2020 – June 2020
CRY - Child Rights and You *India*

- I was responsible for organizing a crowd-funded E-campaign called "Summer Together" to raise awareness about the child victims of COVID-19 pandemic. The campaign raised 500,000 INR from almost 200 contributors.
- The work consisted of planning the event, on- boarding session experts, publicising the event for sign ups and overseeing the progress of the camp. This profound experience has taught me to be thankful for the privileges that I was bestowed with, to never take things for granted and work hard for what I aspire.

Core Team Member - IEEE Student Chapter Dec. 2018 – Nov. 2019
Bennett University *Greater Noida, India*

- Responsible for managing projects, conducting technical workshops and introductory events for the freshman at university. Organized a hackathon 'HackPhoria' at Bennett University where I managed around 100 participants and this experience inculcated valuable leadership lessons.

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[1]https://www.aclweb.org/anthology/D19-5021.pdf