

HEMANTH GUDAPARTHI

✉ gudapahh@mail.uc.edu

☎ +1 (513) 807-0111

Research Interests

Software Engineering, Requirements Engineering, Testing Methods for Deep Neural Networks, Machine Learning, Data Analysis and Natural Language Processing

Education

Doctor of Philosophy (PhD), Computer Science

University of Cincinnati

📅 Ohio, United States, expected Summer 2023 (GPA: 3.80/4)

Master of Science (MS), Computer Science

University of Cincinnati

📅 Ohio, United States, Spring 2018 (GPA: 3.63/4)

Bachelor of Engineering (BE), Electrical & Communication Engineering

Andhra University

📅 Visakhapatnam, India, 2015 (GPA: 8.0/10)

Professional Experience

Research Assistant

In Collaboration with Procter & Gamble (P&G)

📅 August 2021 – December 2022

📍 Cincinnati, Ohio, USA

- Been part of research project with PG as a research assistant for data analytics and developing graph convolutional neural networks (GCNNs) for customer recommendation and satisfaction analysis.
- **Design platform and tools:** Python, MATLAB for visualization, Spektral

Research Assistant

In Collaboration with Procter & Gamble (P&G)

📅 September 2020 – January 2021

📍 Cincinnati, Ohio, USA

- Been part of a research project in PG in analyzing twitter data about new moms and their needs. We have found out the psychological and tangible products that would help new mom or pregnant women to deal with different issues during pregnancy.
- **Design platform and tools:** Python, SciPy, Keras, MATLAB for visualization

Intern

Electronics Corporation of India Limited

📅 May 2014 – August 2014

📍 Hyderabad, India

- Worked on developing a closed contact monitoring system using Programmable Logic Circuits (PLC)

Publications and Talks

1. **Hemanth Gudaparthi**, Nan Niu, Yilong Yang, Matthew Van Doren, Reese Johnson, "Deep Learning's fitness for purpose: A transformation problem Frame's perspective", **CAAI Transactions on Intelligence Technology, 2023**
2. **Hemanth Gudaparthi**, Prudhviraaj Naidu, Nan Niu, "Metamorphic Testing of Image Classification and Consistency Analysis Using Clustering", International Journal of Multimedia Data Engineering and Management, **IJMDEM 2022**
3. **Hemanth Gudaparthi**, Nan Niu, Boyang Wang, and Juha Savolainen, "Reliability of Convolutional Neural Networks: Failure Metrics with Metamorphic Test Cases", IEEE 22nd International Conference on Information Reuse and Integration for Data Science **IEEE IRI 2021**

4. Prudhviraaj Naidu, **Hemanth Gudaparthi**, and Nan Niu, "Metamorphic Testing for Convolutional Neural Networks: Relations over Image Classification", IEEE 22nd International Conference on Information Reuse and Integration for Data Science **IEEE IRI 2021**
5. **Hemanth Gudaparthi**, Reese Johnson, Harshitha Challa, and Nan Niu, "Deep learning for smart sewer systems: assessing nonfunctional requirements", In Proceedings of the ACM/IEEE 42nd International Conference on Software Engineering: Software Engineering in Society **ICSE-SEIS '20**.
6. **Hemanth Gudaparthi**, and Nan Niu "Waterworks Analytics: Understanding Customer Needs and Reducing Service Costs via Natural Language Processing and Deep Learning", Confluence Tech Showcase & Aqua Pitch, 2019.

Programming

Python C C++ Java R SAS x86 Assembly Shell Scripting

Tools & Simulators

Tensorflow Matlab Keras SciPy NLTK Spacy GCNNs MPLAB QuestaSim Xilinx ISE

Academic Research Projects

- **Topic Segmentation Model Hierarchical LSTM and Reinforcement Learning**
 - ★ Applied a state-of-the-art topic segmentation model based using hierarchical LSTM and reinforcement learning which could detect topic boundaries, local topic continuity and topic drifting on call data.
Design platform and tools: Python, Tensorflow
- **Sentiment Analysis on Software Interviews**
 - ★ Applied sentiment analysis on software interviews for understanding the behavior of the interviewee that helps in aing a job interview
Design platform and tools: Python, PyAudioAnalysis, MATLAB for visualization
- **Analysis Context-Based Insults using Twitter Data**
 - ★ Conducted research on classification of asteisms and context-based insults in scientific journal reviews and movie reviews by applying a novel method of semantic analysis. Statistical data analysis was applied in classifying the insults within a range of 1-5 and then used machine learning model to predict the asteisms in scientific journal reviews.
Design platform and tools: Python, SAS for data management and analysis
- **Question Duplication Analysis on Quora**
 - ★ Design of an inference model for knowing Question Duplication (on Quora question duplication dataset and other Q&A system-based websites). Conducted a data analysis research on these datasets using SAS and built a machine learning model to recognize duplicate queries in Quora
Design platform and tools: Python, NLTK, SAS for data management and analysis, MATLAB for visualization

Other Course Projects

- A Bluetooth operated Hand gesture recognition module.
Design platform and tools: PIC24EP, RS-42 Bluetooth, MPLAB X.
- Implementation of UART, I2C and SPI bus protocols.
Design platform and tools: PIC24EP, MPLAB X.
- Temperature variation detector using A/D converter.
Design platform and tools: TC1047A Sensor, PIC24EP micro-controller, Pic Kit 3, MPLAB X, VT-100 terminal window.
- Design of University of Cincinnati email ID Generator
Design platform and tools: PIC24EP micro-controller, Pic Kit 3, MPLAB X, VT-100 terminal window
- Design of TCP Server and TCP Client in Java
Design platform and tools: JAVA, GNU debugger

- Design of University of Cincinnati email ID Generator
Design platform and tools: PIC24EP micro-controller, Pic Kit 3, MPLAB X, VT-100 terminal window.
- Designed a model to solve the race condition in Java when two threads share the same memory location
Design platform and tools: JAVA, GNU debugger
- Worked on developing efficient constant modulus algorithm-peak to average power ratio (CMA-PAPR) reduction in multiple input multiple output orthogonal frequency division multiplexing (MIMO-OFDM) systems

Teaching Experience

Teaching Assistant, EECE 3093C: Software Engineering

University of Cincinnati

📅 Summer 2020

📍 Cincinnati, Ohio, USA

Teaching Assistant, CS 5128/6028: Large Scale Software Engineering

University of Cincinnati

📅 Spring 2021

📍 Cincinnati, Ohio, USA

Organizational Experience

Judging Panel for Group-based projects: Requirements Engineering Course (CS-5127/6027)

University of Cincinnati

📅 November 2019