KRISHNA SRI IPSIT MANTRI

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Education

Purdue University — West Lafayette, IN, USA
Master of Science in Computer Science – Focus in Machine Learning — *Aug'23 – May'25*

Indian Institute of Technology Bombay — Mumbai, India
Bachelor of Technology in Electrical Engineering — *July'18 – May'22*

- Cumulative GPA: **9.36/10.0**
- Minor Degrees: (1) Computer Science and Engineering (2) Artificial Intelligence and Data Science

Professional & Research Experience

Graduate Research Assistant — *Sept'23 – Present*
Working with Prof. Can Li from the Davidson School of Chemical Engineering — *Purdue University*

- Working on developing a chatbot using GPT-4 to explain optimization models in chemical plants and industries

Software Engineer | **Texas Instruments** — *July'22 – July'23*
Part of Power Interfaces Firmware Team which works on USB-Type C Power Delivery and Power Over Ethernet

- Designed and developed **Firmware validation** suite for TPS23881 chip using **Pytest** and **Jenkins** framework
- Ported the **I^2C** and **UART drivers** to **FreeRTOS** for **ARM**-based MSPM0 microcontroller

Software Engineer | **Microsoft** — *May'21 – Jul'21*
Part of the Defensive Search team at Microsoft Bing which works on safe search recommendations

- **Automated** the query expansion pipeline used in enabling safe search in the Bing search engine using **C#**
- **Reduced** query treatment time by **62%** using sampling techniques to minimize the budget for crowdsourcing

Constrained Influence Maximization in Social Networks — *Jan'22 – May'22*
Bachelor's Thesis, Guide: Prof. Abir De, Prof. Sayan Ranu — *IIT Bombay*

- **Introduction:** *Influence maximization refers to the problem of finding a subset of nodes in a network through which we could maximize our reach to other nodes in the network.* ***TopK-InfluMax*** *aims at finding this set of nodes and* ***TopK-InfluNet*** *is a GNN framework to learn the process of information spreading in the network.*
- Assisted in framing the objective as a difference between γ**-weakly submodular** and a modular function
- Performed a thorough literature survey on **influence maximization** and **submodular optimization**
- Extracted novel datasets from **Digg**, **Weibo** and **Cit-HepPh** networks employing node and cascade pruning
- Developed the TopK-InfluNet by exploiting the **deep submodular** nature of NNs with non-negative weights

Technical Skills

Programming Languages: C, C++, Python, MATLAB, Perl, C#
Machine Learning: PyTorch, TensorFlow, Keras, OpenCV, Numpy, Pandas, Seaborn, Sklearn, PyTorch Geometric
Web Development: HTML, CSS, JavaScript, Angular, Flask
Software: Jira, Confluence, BitBucket, Git, GNURadio, NgSpice, LaTeX, GNUPlot, XCircuit
Embedded: Keil μVision, TI Code Composer Studio, MSP430, CM3, FreeRTOS, Saleae Logic Analyser, VHDL

Selected Publications

1. "Learning and Maximizing Influence in Social Networks Under Capacity Constraints", at WSDM, 2023.
2. "STAGCN: Spatial-Temporal Attention Based Graph Convolutional Networks for COVID-19 Forecasting" at 2023 ICLR First Workshop on Machine Learning & Global Health.
3. "Interactive Fashion Content Generation Using LLMs and Latent Diffusion Models" at Third Ethical Considerations in Creative applications of Computer Vision workshop, CVPR 2023.
4. "Image Denoising Using Diffusion Models" at 8th IEEE Workshop on Computer Vision for Microscopy Image Analysis, CVPR 2023.
5. "Developing Methods for Identifying and Removing Copyrighted Content from Generative AI Models", accepted at 1st Workshop on Generative AI and Law at ICML 2023
6. "Synthetic Medical Image Generation Using Latent Diffusion Models and Large Language Models", accepted for poster presentation at the Medical Imaging with Deep Learning Conference (MIDL) 2023.

Achievements, Extra-Curriculars and Responsibilities Held

- Accepted to **The Cornell, Maryland, Max Planck Pre-doctoral Research School** 2023 (*2023*)
- Secured an **All India Rank of 242** in JEE Advanced among 0.2 million candidates (*2018*)
- Completed an year-long training in **lawn tennis** under National Sports Organization, India. (*2018*)
- Served as **Web Nominee** for the university dorm student council at IIT Bombay (*2020*)