VAISHNAVI PANCHAVATI

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Education

University of Massachusetts Amherst **Feb 2023 – Dec 2024**
Master of Science in Computer Science ***(Minor:Data Science)****, GPA :****4.0/4.0*** *Amherst, MA*

National Institute of Technology Karnataka, Surathkal(NITK) **Aug 2014 – May 2018**
*Bachelor of Technology in Electrical and Electronics Engineering, CGPA :****9.26/10*** *Surathkal, Karnataka*

Relevant Coursework:
Advanced Natural Language Processing, **Neural Networks, Advanced Algorithms**,
Distributed Systems , Machine Learning, Information Retrieval, Data Structures and Algorithms, Microprocessors

Technical Skills

Languages: C, C++, Python, System Verilog, HTML, CSS,Perl, Matlab, R
Technologies/Frameworks: Linux, Flask, Django, gRPC, SQLite, Shell scripting
Machine Learning: Numpy, Pandas, Tensorflow, Pytorch, Matplotlib, Scikit-learn
Miscellaneous:Git, Docker, Kubernetes, AWS, DB Management, Distributed Applications, Computer Vision, LLM fine-tuning, Problem Solving

Relevant Experience

Texas Instruments **Aug 2019 – May 2022**
Digital Design Engineer(5G Transceiver SOC) *Bangalore, Karnataka*

- Formulated tests to evaluate calibration subchip's features and developed functional tests in C to assess various subchips within the SOC using Cortex R5/R4 processors.
- Developed automation scripts in Python to streamline regression tests, ***reducing manual verification time by 40%***, and enhanced MATLAB models for input data simulation to verify transmitter subchip calibration, ***cutting datapath test errors by 60%*** .

Qualcomm **Sep 2018 – April 2019**
Software Engineer (4G/5G Small Cells) *Hyderabad, Telangana*

- Enhanced LTE PHY layer protocols in CATM1 and NBIoT devices by developing Python and C++ feature tests, identifying corner cases to ***boost performance up to 90%*** in key tests like throughput and SINR for both FDD and TDD systems.

Projects

Quote-MI : Quote Multilabel classification and Interpretation | *Python, LLM*

- Manually created datasets on quotes and fine tuned and evaluated ***BERT***,***RoBERTA***,***GPT2***,***T5*** for multi-label classification on quotes obtaining an accuracy of **70%** and evaluated ***Gemma*** and ***T5*** using zero shot and few-shot prompting techniques for interpretation.

Knowledge distillation for Neural Network compression | *Pytorch, Computer Vision*

- Explored various knowledge transfer techniques, such as logit matching, feature matching for image classification task on CIFAR-100 and ImageNet datasets. Experimented with custom architectures to assess trade-offs across evaluation metrics like accuracy, compression ratio, inference time, and memory usage.

Exploring Machine Learning Algorithms Across Multiple Datasets | *Python*

- Implemented hyperparameter-tuned ***KNN***, ***Random Forest***, and ***Neural Networks*** from scratch on Parkinson's, Loan, and Titanic datasets, achieving over **90%** accuracy with the best-performing model for each dataset.

RL-ActorCritic-SARSA | *Python, Reinforcement Learning*

- Implemented and evaluated ***One-Step Actor Critic*** and ***Semi-Gradient n-step SARSA*** algorithms on Cartpole, Acrobot and 687-Gridworld environments from OpenAI's Gym.

Distributed Stock Bazaar Application | *Multithreading, Flask, Docker, Python*

- Developed a ***fault-tolerant***, ***distributed*** stock market application with ***microservices architecture***, employing ***gRPC***, ***multithreading***, ***leader election***, ***caching***, ***replication***, ***database management***, ***locking***, containerization with Docker, and deployment on AWS.

4G LTE Downlink Channels | *C++*

- Implemented 4G downlink channels PBCH, PDCCH, PHICH, PCFICH from scratch with the encodings and mappings

Online Coursework

Coursera: **DataStructures and Algorithms Specialization**, **Deep Learning Specialization**
NPTEL (***Award***): **Operating Systems**, **Theory of Computation**, **Discrete Mathematics**, **Analysis of Algorithms**