Dhawal Modi

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Education

University of California - Merced Aug 2023 - May 2025
Master of Science in Electrical Engineering & Computer Science (GPA: 3.90 / 4.00)

Rajiv Gandhi Proudyogiki Vishwavidyalaya Jul 2016 - Jun 2020
Bachelor of Engineering in Electronics & Communications Engineering (GPA: 3.27 / 4.00)

Technical Skills

Languages: Python, Java, Javascript, C++, CUDA, Matlab
Frameworks: Spring Boot, Node.js, Express.js, React, PyTorch, TensorFlow, FastAPI, Flask
Databases: Oracle SQL, PostgreSQL, IBM Db2
Technologies: CSS, HTML, XML, BASH/Shell, LaTeX

Experience

University of California, Merced Aug 2024 – Present
Software Engineer / Graduate Student Researcher - Castro Lab

- Architected a software solution for EV Charger management at UC Merced, optimizing campus-wide electric vehicle infrastructure for **10000+** monthly users.
- Implemented a full-stack web application using React, TypeScript, and Tailwind CSS for the frontend, integrating with EV charging station API for **real-time** monitoring and control.
- Designed and normalized PostgreSQL database schemas to track user demographics, vehicle data, and charging patterns, enabling data-driven equity analysis.

University of California, Merced Jan 2024 – Present
Deep Learning Engineer / Graduate Student Researcher - MoCA Lab

- Developed a mobile robotic platform using the AgileX SCOUT UGV to assist forest crews in reducing wood waste and preventing wildfires.
- Finetuned ENet and SegFormer Semantic Segmentation models for Robot path traversibility application on custom dataset with an mIOU of **0.729** and **0.68** respectively (**improvement of 23% and 15% over baseline models**).
- Trained and deployed ENet CNN model on Nvidia Orin AGX for real-time tasks, achieving **25ms inference time per frame**.

Tata Consultancy Services Limited Nov 2020 – Jul 2023
Software Developer

- Implemented and streamlined validation routines for Outward Direct Debits and Credit Transfer payment channels, developing interfaces as per FPS and HKICL specifications. This enabled high-efficiency processing, handling up to **100,000 transactions per minute.**
- Designed Spring REST API Client integration with BPAY API, enhancing real-time bill payment processing by **35%**
- Led microservices architecture development for rapid API prototyping, ensuring successful deployment to testing and production environments.
- Optimized Oracle SQL database queries, reducing Direct Debit and Credit Transfer Payment file upload times by **15%** and boosting overall application performance.

Projects

Heart Activation time & Transmembrane Potential Reconstruction | *PyTorch, Pandas, matplotlib, Python, Numpy*

- Led a team of 3 undergraduate students at the Data Science Challenge hosted by Lawrence Livermore National Laboratory to implement and design Deep Learning models for Heartbeat classification & Transmembrane Potential curve reconstruction.
- Implemented Customized 1D SqueezeNet CNN model to predict Myocardium Activation Times and Transmembrane Potential Curve reconstruction with **97.46% accuracy** on 1600 samples of unseen data.

Binary Classification with a Bank Churn Dataset | *Python, Scikit, Seaborn, Matplotlib, Jupyter Notebooks*

- Built a Binary Classifier to predict churn using XGBoost achieving an ROC-AUC percentage score of 88.5%.
- Created data visualizations for the training dataset using Python and Seaborn library revealing patterns in the dataset.