## **EDUCATION**

### North Carolina State University, Raleigh

Aug 2022 – May 2024 (anticipated)

Master of Science, Electrical and Computer Engineering

GPA - 4.0/4.0

Coursework: Computer Vision, Pattern Recognition, Digital Imaging Systems, Advanced Machine Learning, Automated Learning and Data Analysis, Data Science, Neural Networks and Deep Learning, Mechatronics, Object Oriented Design and Development

## National Institute of Technology Bhopal, India (NIT-B)

Jul 2016 - Jun 2020

Bachelor of Technology, Electrical Engineering

GPA - 7.9/10

Coursework: OOP in C++, MATLAB, Modern Control Systems, Digital Signal Processing, Electrical Measurement and Instrumentation, Industrial Electronics

## TECHNICAL SKILLS

Programming Languages: Python, SQL, C++, MATLAB, R Programming, HTML5, CSS, JavaScript

Frameworks & Libraries: PyTorch, TensorFlow, Keras, OpenCV, scikit-image, scikit-learn, Pandas, Seaborn, Matplotlib, NumPy

OS & Tools: Linux (Ubuntu), PowerBI, Roboflow, Dataiku DSS, JMP, ROS, Git, Docker, Kubernetes, REST API, Jupyter Notebook, Trello, Agile/Scrum Methodology Miscellaneous: Experienced in statistical analysis and conveying narratives through data visualization. Knowledge of machine learning concepts, computer vision algorithms and strong mathematical skills in statistics, probability theory, and geometry.

## PROFESSIONAL AND RESEARCH EXPERIENCE

Oct 2023 - Present **ML Research Intern** 

Sozzani Lah NCSU

Raleigh, North Carolina · Spearheaded the development of CNN and BiLSTM models, while demonstrating resilience against data overfitting. Achieved robust performance in predicting

- transcriptional Activation Domains (ADs) within Arabidopsis gene expression, surpassing established benchmarks. • Initiated ongoing Exploratory Data Analysis (EDA) on 50,000+ diverse protein sequences and genomic data samples using SQL and Python. Effectively
- communicated the efficacy of generated models through data-based results (Explainable AI).
- · Contributed to the research paper-style documentation (publication in-review), outlining used algorithms and learning methodologies.

#### **Data Science Intern**

May 2023 - Aug 2023

Houston, Texas

Schlumberger Limited (SLB)

- · Improved predictive maintenance workflows for Remaining Useful Life (RUL) of electronic sensor boards on oil drilling tools, by implementing classical machine learning models (XGBoost, Random Forest, GBM) with exceptional accuracy and recall scores of approximately 92%.
- Enhanced dataset balancing using SMOTE oversampling and Generative Adversarial Network (GAN). Leveraged advanced statistical features (histograms, quantiles, probability mass function) to integrate data-driven insights with domain knowledge.
- Applied clustering and processing techniques, such as K-means, Interactive Clustering, and Anomaly Detection, to analyze datasets from 1,500+ electronic channels. This effort identified meaningful correlations across these channels, contributing to improved decision-making.

## Research Volunteer EcoPRT NCSU

Feb 2023 - May 2023

Raleigh, North Carolina

- · Assisted in implementation of PointPillar feature encoder for 3-D object classification and segmentation, employing training using LiDAR point clouds and photogrammetry. Hands-on experience with ZED camera and ROS within the autonomous vehicle research group.
- Helped in developing a classification system with the **PointNet+**+ architecture and comparing the performance with PointNet model for runtime optimization.

# System Engineer

Aug 2020 - May 2022

Vadodara, India

- Larsen & Toubro Limited (L&T)
- Utilized data analysis and visualization techniques using RStudio and PowerBI to conduct relay coordination studies. Identified and implemented optimal protective configuration settings in thermal power plants using PLCs, resulting in a substantial 30% reduction in operational downtime.
- Orchestrated seamless collaboration with cross-functional teams spanning various engineering departments, and with third-party suppliers. Coordinated Factory Acceptance Tests (FAT) for various customers. Implemented data-driven optimizations, yielding substantial cost savings across 6 unique projects in India.
- · Facilitated the creation of automatic sizing and calculation sheets for electrical and instrumentation packages such as UPS battery packs, plant illumination, switchgears, and SCADA, lowering the potential for human error. Additionally, conducted root cause analysis for failures in electrical and mechanical systems.
- Demonstrated proficient leadership skills to guide and mentor prospective hires of engineering and procurement departments.

## ACADEMIC PROJECTS

**Deep Learning – Deepfake Images Detection Algorithm** | Python (PyTorch, sklearn)

Feb 2023 - May 2023

- · Generated 120,000 fake images from CelebA real images dataset for different GANs (DCGAN, PGGAN, WGANs) and trained a combined Siamese Network (Common Fake Feature Network + Classification Network) for fake/real images annotations.
- Utilized CUDA High Performance Computing to expedite model training and achieved impressive accuracy of 99.37% and recall of 99.31%.

Machine Learning – 2-D Object Detection for Autonomous Vehicle | Python (TensorFlow, Keras)

Jan 2023 - Feb 2023

- Trained YOLOv3 model with DarkNet-53 architecture as codebase and for MSCOCO dataset with 10,000+ car dashcam images.
- · Surpassed model performance over other algorithms in terms of Frames Per Second (FPS) and mean Average Precision (mAP) scores.
- Computer Vision SIFT Key Descriptor Blob Detection in Images | MATLAB

Nov 2022 - Dec 2022

- · Engineered frequency domain filtering in images from scratch, to speed up the process of convolution to mere 20 milliseconds.
- · Constructed Laplacian scale space for multiple images and implemented Harris' Non-Max Suppression for effective blob detection.
- Mechatronics EV3 Robot for Path Tracking, Platooning and Parking | MATLAB

Oct 2022 - Dec 2022

- Designed and built EV3 robot featuring in-house developed color and ultrasonic sensors, attaining 95% accuracy in path tracking and 98% in parking.
- Implemented PID controller to compute error signals with a precision rate of 99%, significantly improving the bot's functionality and efficiency.

## CERTIFICATIONS AND EXTRACURRICULARS

- · Secured 3rd place in the Machine Learning track at the annual N.C. PSI Hackathon as a member of team of four students.
- Dataiku DSS "Machine Learning Practitioner", "Core Designer", NVIDIA "Deep Learning Fundamentals", "Image Segmentation Techniques"
- Vice Chairperson (Administration) IEEE MANIT Student Branch Won Darrel Chong Activity Award (Gold Category).