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Trishal Muthan

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EDUCATION

University of Virginia, **School of Engineering and Applied Sciences** Charlottesville, VA
Bachelor of Science, Computer Science (GPA: 3.96) *Aug 2022 – May 2025*
Relevant Coursework: Data Structures and Algorithms, Computer Systems and Organization. Software Engineering, Discrete Mathematics and Theory, Linear Algebra, Probability, Data Science and Statistical Analysis

EXPERIENCE

Software Engineering Intern, *BTI360 (Herndon, VA)* *May 2024 – Aug 2024*
- Developed custom knowledge graph by extracting and connecting entities from web-scraped news articles to reveal real-world relationships between people, places, and organizations
- Engineered data transformation pipeline leveraging Python, AWS services (Lambda, S3, SQS, SNS), and relationships from open-source data to identify entities from text and build knowledge graph in AWS Neptune
- Implemented high-performance REST API service with SpringBoot, Java, and AWS services (EC2, ECS, ECR), facilitating efficient querying of knowledge graph database to serve data to front-end service
- Designed engaging user interface using Angular, HTML, CSS, and TypeScript, enabling users to easily search for entities and visually explore properties, connections, and relevant news articles

Software Engineering and Cloud Intern, *ST Engineering iDirect (Herndon, VA)* *May 2023 – Aug 2023*
- Extracted critical data including warnings and usage from company hardware and displayed data to product UI alongside information and logs using Python, Grafana, and Bash scripting
- Leveraged Docker, Kubernetes, Ansible, and Bash scripting to containerize and deploy features onto OpenShift cluster, enhancing team efficiency in supervision and maintenance of hardware
- Configured Argo CD pipeline allowing for efficient deployment of upcoming features onto Kubernetes
- Debugged and resolved network issues between servers, switches, and development VMs, enabling multiple teams to continue development without interruptions

Machine Learning Research Assistant, *University of Virginia* *Aug 2022 – May 2023*
- Implemented random forest classifier to classify sensory neuron recordings by emotional intention using Python, Scikit-Learn, NumPy, Pandas, and Matplotlib
- Utilized computer vision libraries to process and analyze images of neuron firings when individuals are exposed to various forms of physical touch

Algorithmic Fairness Research Assistant, *Cornell University* *Jun 2021 – Sep 2021*
- Analyzed emergent biases of specific types of machine learning models upon application to recidivism, hospital readmission, and loan-giving datasets with Python and Keras
- Investigated effectiveness and value of popular fairness and disparity metrics using R
- Developed and proved algorithm to identify sibling pairs in a binary-bifurcating tree given final layer of nodes

PROJECTS

Real-Time Vehicle Classification System *Aug 2021 – Jun 2022*
- Designed vehicle image classification system using Python, TensorFlow, Keras, NumPy, and Sci-Kit Learn
- Optimized original YoloV3 and Inception-based convolutional neural network architectures to classify images into 196 types of vehicles and store classification data in real-time with MySQL

SeniorShield *Mar 2021 - Apr 2021*
- Built mobile application using Swift, Firebase, and Raspberry Pi to alert cognitively impaired individuals whether people sensed and recorded by doorbell camera are safe or strangers
- Architected facial recognition models and comparison algorithms using Python, OpenCV, and Sci-Kit Learn

SKILLS

Languages: Python, Java, C++, JavaScript, TypeScript, HTML, CSS, C, R, SQL
Frameworks and Libraries: Django, Spring, Flask, Angular, React, Node, Tailwind CSS, TensorFlow, PyTorch, Keras, NumPy, Sci-Kit Learn, Pandas, JUnit, Jest, Pytest
Tools and Technologies: AWS, Linux, Git, Bash Scripting, Gradle, Docker, Kubernetes, MySQL, PostgreSQL, Elasticsearch, CI/CD, Jira