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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: 4.0) *Aug 2022 – May 2025*
Relevant Coursework: Data Structures and Algorithms, Computer Systems and Organization. Software Development Essentials, Discrete Mathematics and Theory, Linear Algebra, Data Science with R, Statistical Analysis

Thomas Jefferson High School for Science and Technology Alexandria, VA
Advanced Studies Diploma (GPA: 4.36 Weighted) *Aug 2018 – Jun 2022*
Relevant Coursework: Machine Learning, Artificial Intelligence, Computer Vision, Multivariable Calculus, Linear Algebra, Mobile and Web Development, AP Computer Science

EXPERIENCE

Software Engineering and Cloud Intern, *ST Engineering iDirect (Herndon, VA)* *May 2023 – Aug 2023*
- Played role in development of company's hardware infrastructure management and monitoring tool
- Added feature which extracted data such as warnings and temperature from company's switches and servers and displayed information to product UI using Python, Ansible, and Bash scripting
- Configured and deployed aforementioned infrastructure tool as virtual machine onto company's new OpenShift cluster using Linux and Bash scripting, allowing Cloud team to more efficiently supervise and maintain any hardware being utilized
- Debugged and resolved network issues between servers, switches, and development VMs, unblocking multiple teams and allowing for continuation of development

Algorithmic Fairness Research Assistant *Jun 2021 – Sep 2021*
- Conducted investigation into algorithmic fairness and common biases of various machine learning models
- Applied machine learning models on datasets related to inmate recidivism, hospital readmission, and loan giving and found that models frequently formed biases, typically based on race and gender
- Analyzed effectiveness and value of commonly used fairness and disparity metrics using R
- Developed algorithm for determining pairs of siblings within binary-bifurcating tree when given only final layer of nodes and proved algorithm using Python and Keras and drafted research paper discussing findings

Machine Learning Research Assistant, *UVA Touch Lab* *Aug 2022 – May 2023*
- Analyzed responses of afferent (sensory) neurons when people are exposed to various types of physical touch
- Designed and implemented random forest classifier to classify emotional intention of physical touch based on afferent neuron recordings using Python, Scikit-Learn, NumPy, Pandas, and Matplotlib

Software Engineering Intern, *Rayze Technologies* *Sep 2020 – May 2021*
- Programmed and managed websites using HTML, CSS, JavaScript, and Python (Flask, Django) for clients
- Assisted other developers in hosting (Heroku, Digital Ocean), data analytics, and mobile development

PROJECTS AND ACTIVITIES

Real-Time Vehicle Classification System *Aug 2021 – Jun 2022*
- Created vehicle image classification using Python, TensorFlow, Keras, NumPy, and Sci-Kit Learn
- Manipulated original YoloV3 and Inception-based convolutional neural network architectures alongside Stanford Cars dataset to classify images into 196 classes of vehicles
- Stored classification data in real-time in secure databases using MySQL
- Wrote research paper detailing background, development, and applications which include traffic control and security

SeniorShield *Mar 2021 - Apr 2021*
- Mobile application built using Swift, Firebase, and Raspberry Pi that alerts cognitively impaired users whether individuals sensed and recorded by doorbell camera are safe or strangers
- Developed facial recognition models and comparison algorithms using Python, OpenCV, and Sci-Kit Learn

SKILLS

Languages: Python, Java, C++, JavaScript, MATLAB, C, R, SQL, Bash Scripting
Tools and Technologies: Linux, Git, HTML, CSS, TensorFlow, Keras, Scikit-Learn, NumPy, Pandas, Flask, Django, Agile Methodology, Jenkins, Kubernetes, Ansible, Argo CD, Computer Networking, AWS, OpenShift, Cloud Computing