Vasudev Menon

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Education

North Carolina State University Raleigh, NC

B.S. in Computer Science & B.S. in Mathematics | Cum. GPA: 4.0/4.0 *Expected Spring 2026*

- Coursework: Mathematics in Data Science, Real Analysis, Linear Algebra, Software Development, C Programming, Data Structures & Algorithms, Operating Systems, Calculus I/II/III + Differential Equations, Discrete Mathematics
- Awards: Dean's List All Semesters
- Minor: Music Studies

Experience

Software Engineer Intern June 2024 – August 2024

Fidelity Investments *Durham, NC*

- Developed an assessment engine that produces assessments to gauge the dependability of enterprise wide technology applications for over 4,000 company leads
- Implemented a dashboard integrated with Power Platform API and developed plugins to house the solution within the Backstage developer portal using Node.js and TypeScript
- Utilized Docker for DevDocs integration to provide documentation for users

Undergraduate Deep Learning Research Intern May 2023 – August 2023

North Carolina State University *Raleigh, NC*

- Developed numerous shell scripts to assist in running large scale experiments analyzing state-of-the-art algorithms such as Batch Normalization in Deep Learning. Trained numerous models that helped show an decrease in training time with networks with Batch Normalized layer on a GPU platform.
- Conducted data analysis for an NSF funded project and aided in the design of statistical experiments to determine the effectiveness of an intelligent tutoring system in a peer tutoring environment.
- Conducted literature reviews, stayed updated with the latest advancements in deep learning, and integrated relevant findings into ongoing research.

Data Science Intern June 2021 – Feb. 2022

Rice University & North Carolina State University *Remote*

- Conducted research on an NSF funded project to extrapolate and research COVID-19 sequence data using R.
- Utilized numerous state-of-the-art statistical algorithms to examine DNA sequence data to come up with research findings that observed key differences between over 100,000 virus strains.
- Presented research at the Junior Science and Humanities Symposium.

Projects

Exploring Differential Privacy in Federated Learning | *Python, Flower, Machine Learning* Jan. 2025 – Present

- Researching Distributed Differential Privacy (DDP) in Federated Learning (FL) with heterogeneous clients and multi-modal data.
- Analyzing trade-offs between privacy, model accuracy, and computational overhead in privacy-preserving FL.
- Implementing FL frameworks like Flower to develop optimized privacy strategies.
- Collaborating with Dr. Olivera Kotevska (Oak Ridge National Laboratory) and Dr. Mansoor Haider (North Carolina State University).

LocusListings.com: Real Estate Listing Website (*Archived*) | *AWS, React, Django, Azure* Sep. 2024 – Dec. 2024

- Developed a fully functional real estate listing website that curated rental properties based on user preferences.
- Implemented a user-friendly interface with property search functionality, allowing users to filter listings dynamically.
- Designed and integrated an algorithm to rank properties based on user preferences and search trends.
- Deployed the application on AWS Elastic Beanstalk and maintained cloud-based API integrations before archiving the project due to API pricing constraints.
- Website (*Archived*): https://locuslistings.com

EmoNet: Emotion Detection with Deep Learning | *Tensorflow, Keras, OpenCV, Git* Jul. 2023 – Jul. 2023

- Designed and implemented a Convolutional Neural Network (CNN) architecture to train an emotion classification model using TensorFlow and Keras on a GPU platform.
- Integrated OpenCV to enable users to input their own facial data for real-time emotion analysis.
- GitHub: https://github.com/vmenon04/EmoNet

Technical Skills

Languages: Python, Java, C/C++, R, PowerShell, SQL
Tech/Tools: Git, React, Eclipse, MySQL Workbench, Jenkins, RStudio, R Tools, Visual Studio Code, JUnit, Flask, Streamlit, Power Platform, Docker, LaTeX
Libraries: TensorFlow, Keras, Pandas, NumPy, PyTorch, Matplotlib, Cryptography, Selenium
Generic Competencies: HTML, CSS, Microsoft Suite, G Suite