MONNIIESH VELMURUGAN

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EDUCATION

University of Wisconsin – Madison 2024
Bachelor of Science – Computer Science, Data Science

- Dean's List – 4 semesters
- *Relevant Courses* – Operating Systems, Databases, Data Science, Networks, Algorithms, Linear Algebra, Matrix Methods in Machine Learning, Statistics, Big Data, Artificial Intelligence

PUBLICATIONS

- Aidana Beisenova, Wihan Adi, S. Janna Bashar, Monniiesh Velmurugan, Kenzie B. Germanson, Miriam A. Shelef, Filiz Yesilkoy: *Machine-learning-aided multiplexed nano biosensor for COVID-19 population immunity profiling* Sensors & Diagnostics 2(4):753, 2023

EXPERIENCE

UW-Madison, Department of Biomedical Engineering Madison, WI
Undergraduate Research Assistant – Brain tumor profiling May 2023 – Mar 2024

- Created a Python-based Convolutional Neural Network using spectroscopic brain tissue scans to achieve 80% accuracy in predicting brain tumors.
- Co-authoring a research paper titled 'Meningioma induced brain tumor profiling with neural network models'.

UW-Madison, Department of Computer Science Madison, WI
Undergraduate Teaching Assistant – Data Programming I Sep 2022 – May 2023

- Teaching a lab session of 45 students, helping them understand complex concepts and tackle programming challenges.
- Designing class projects and quizzes that align with course objectives to assess students.

UW-Madison, Department of Biomedical Engineering Madison, WI
Undergraduate Research Assistant – COVID-19 population immunity profiling May 2022 – Apr 2023

- Performed data analysis and optimization techniques on antigen-specific antibody samples using Python
- Created a custom Random-Forest model to achieve about 90% accuracy in quantifying past infection, vaccination, and immunity against COVID-19 variants.

UW-Madison, Department of Material Science & Engineering Madison, WI
Undergraduate Research Scholar Sep 2020 – May 2021

- Created a Python-based Convolutional Neural Network (CNN) using MuViz models of novel polymer ceramic compounds to predict conductivity of solid-state batteries.
- Developed a Fortran program for making structural modifications to the MuViz models for improving the predictive accuracy of the CNN model.

SKILLS

Tech Stack – Python**,** R**,** Java**,** C**,** Shell Scripting**,** Assembly X-86**,** HTML5**,** SQL, Docker, PyTorch, BigQuery, Spark, Cassandra, Kafka
Expertise – Data Analysis**,** Machine Learning**,** Neural Networks**,** Cloud Deployment**,** Linux**,** Automation**,** Web Development

PROJECTS

Home-Based Cloud Server Oct 2022 – Present

- Built local cloud server for cloud computing and backup to enhance personal data management and accessibility.
- Implemented reverse SSH tunneling protocol for data transmission and utilized LUKS encryption for security.
- Developed custom maintenance scripts for system upkeep and streamlined system setup procedures during reboots.

Custom Bash Shell Mar 2023 – Apr 2023

- Created a robust Bash Shell command-line interface entirely in C, tailored for Unix systems.
- Successfully integrated custom-built commands in addition to standard Bash commands, enhancing the shell's functionality and versatility.
- Implemented a comprehensive error handling system to effectively manage forking of concurrent parent and child processes, ensuring system stability and reliability.