SUMEDH MARATHE

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EDUCATION

Master of Science in Electrical and Computer Engineering **Expected Graduation Date: June 2025**

Rutgers University , New Brunswick **GPA: 4.0/4.0**

Relevant Coursework: Communication Networks, Data Structures and Algorithms, Security Engineering, Intro to Deep Learning, Computer Architecture, Cloud Computing and Big Data, Intro to Parallel and Distributed Computing

KEY SKILLS

- **Programming Languages:** Python, C++, C
- **Responsive Web Design:** HTML, CSS, JavaScript, React
- **Tools & Frameworks:** Docker, SQL, Hadoop,PyTorch, NumPy, Git, GitHub, Google Colab, PySpark
- **Design & Simulation:** AutoCAD, SimpleScalar, VMware, CUDA
- **Software & Platforms:** Microsoft Office (Excel, Word, PowerPoint, Outlook), MATLAB, Wireshark

PROJECTS

Incremental Shortest Path Algorithm for Dynamic Network Optimization **April 2024**

- Addressed the inefficiency of traditional shortest-path algorithms in handling dynamic updates within rapidly changing networks.
- Developed an Incremental Shortest Path Algorithm to efficiently manage dynamic updates by adjusting paths incrementally for edge and node modifications.
- Achieved up to 50 times faster performance compared to traditional methods, significantly reducing computational overhead and enhancing real-time network management capabilities.

Pruning a LeNet-5 Convolutional Neural Network on MNIST Dataset **April 2024**

- Optimized a deep learning model for deployment in resource-constrained environments by reducing model size without significant performance loss.
- Applied L1 Unstructured Pruning and Random Pruning techniques to a trained LeNet-5 model, iteratively evaluating their impact on accuracy and compression ratio.
- Achieved a 51% reduction in model size with L1 Unstructured Pruning while maintaining high validation accuracy, demonstrating the method's effectiveness for efficient model deployment.

Comparative Analysis of Methods To Alleviate CPU-GPU Data Transfer Over Head **November 2023**

- Optimized CPU-GPU data transfer in CUDA for improved performance and energy efficiency.
- Researched and applied Unified Memory, Thread Hierarchy, Concurrent Streams, and Pinned Memory.
- Achieved efficiency gains through asynchronous methods, validated by Rodinia, CUDAMicroBench, GSOverlap, and HDOverlap benchmarks.

EXPERIENCE

Excelsource International Pvt. Ltd. , India (Engineer Intern) **Jan 2022-April 2022**

- Developed the RCDS (Remote Connect Disconnect Switch), a cost-effective solution for isolating faults and restoring power in 11 KV feeders.
- Conducted a comprehensive analysis of India's electrical distribution network to identify and understand key shortcomings.
- Assembled and performed High Voltage, Millivolt Drop, and Impulse Withstand Tests on the RCDS.
- Gained practical experience in high voltage testing labs and substations, enhancing knowledge of electrical systems and safety protocols.

LEADERSHIP AND EXTRA-CURRICULAR

- ***Rutgers University*:** Recreation Team: *Recreation Assistant (present), Summer Camp Counselor , Swim Instructor,Intramural Sports Official.*
- **Rutgers Cricket Club (Fundraising Associate)**: Achieved the title of MVP and was the highest run-scorer at the northeast regional cricket tournament in Virginia, showcasing leadership and sportsmanship.
- ***Professional Athlete***: Played cricket at the national level in **BCCI** (Board of Cricket Control of India) tournaments in multiple age categories. Also represented my university in India for the national level **All India Inter University Tournament**.