SUMEDH MARATHE

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EDUCATION

Master of Science in 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, System Analysis

KEY SKILLS

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

EXPERIENCE

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

- Executed the software testing and implementation phase of the Remote Connect Disconnect Switch (RCDS), focusing on ensuring its operational efficacy for remote fault isolation and power restoration in 11 KV feeders.
- Performed various critical tests, including High Voltage, Millivolt Drop, and Impulse Withstand tests, validating the functionality and safety of the RCDS.
- Performed detailed analysis and implemented optimizations to improve the system's remote operations, significantly boosting reliability and performance.

PROJECTS

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

- Developed an Incremental Shortest Path Algorithm to efficiently manage updates in dynamic flight networks, scaling from 5 to 300 nodes and up to 25,000 edges.
- Achieved 50x faster performance by optimizing path adjustments, significantly reducing computational overhead in real-time environments.
- Outperformed traditional algorithms by a factor of 10, proving highly effective for large-scale, dynamic, and sparse networks.

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 98.5% accuracy, demonstrating the method's effectiveness for efficient model deployment.

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

- Enhanced CPU-GPU data transfer in CUDA achieving performance gains up to 30% and efficiency improvements of 25%.
- Researched and applied Unified Memory, Thread Hierarchy, Concurrent Streams, and Pinned Memory.
- Achieved efficiency gains through asynchronous methods, validated by Rodinia, CUDAMicroBench, GSOverlap, and HD-Overlap benchmarks.

LEADERSHIP AND EXTRA-CURRICULAR

- **Rutgers University:** 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.
- **Competed nationally in BCCI (Board of Cricket Control of India)** tournaments across multiple age categories. Also represented my university at the All India Inter University Tournament, showcasing leadership and competitive skills.