SANJALI YADAV

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EDUCATION

University of Maryland, College Park	Dec. 2027
Ph.D., Computer Science	GPA: 4.00 / 4.00
University of Maryland, College Park	Dec. 2023
M.S., Computer Science	GPA: 4.00 / 4.00
University of Maryland, College Park	Dec. 2022
B.S., Computer Science	GPA: 3.94 / 4.00

RESEARCH EXPERIENCE

Computer Architecture Systems Lab, UMD College Park, MD
Graduate Research Assistant Jan 2024 – Present
Advised by Dr. Bahar Asgari

- My research focuses on developing and applying machine learning techniques to optimize sparse accelerator systems, which are crucial for modern computing applications such as large language models and graph analytics. I aim to leverage machine learning to enhance throughput, reduce latency, and improve resource utilization in hardware systems running these workloads.

Maryland Information and Network Dynamics Lab, UMD College Park, MD
Undergraduate Research Assistant Dec. 2019 – Dec. 2022
Advised by Dr. Ashok Agarwala

- Developed a front-end web application using JavaScript to visualize data from 10,000+ sensors monitoring energy consumption in Iribe building at UMD and utilized the data to analyze energy propagation patterns.
- Created an Augmented Reality application for IOS using Unity and ArcGIS framework to scan the rooms in the building and visualize the sensor location and data for efficient building maintenance.

Gemstone Honors College, UMD College Park, MD
Undergraduate Research Program Dec. 2019 - May 2023
Advised by Rick Blanton

- Selected for a 4-year undergraduate research program.
- Worked on piezeoelectric materials and did data analysis

PUBLICATIONS

Misam: Machine Learning–Assisted Dataflow Selection in Accelerators for Sparse Matrix Multiplication
Sanjali Yadav, Amirmahdi Namjoo, Bahar Asgari
Accepted at ACM International Symposium on Microarchitecture, MICRO 2025

- Optimized sparse matrix multiplication by adapting spectral clustering, a machine learning algorithm, to enhance computational efficiency. Achieved a 20x energy savings on state-of-the-art hardware accelerators, significantly improving performance and sustainability.

Boötes: Boosting the Efficiency of Sparse Accelerators Using Spectral Clustering
Sanjali Yadav, Bahar Asgari
Accepted at ACM International Symposium on Microarchitecture, MICRO 2025

- Optimized sparse matrix multiplication by adapting spectral clustering, a machine learning algorithm, to enhance computational efficiency. Achieved a 20x energy savings on state-of-the-art hardware accelerators, significantly improving performance and sustainability.

DynaFlow: An ML Framework for Dynamic Dataflow Selection in SpGEMM Accelerators
Sanjali Yadav, Bahar Asgari
Accepted at IEEE Computer Architecture Letters Journal, 2025

- Developed machine learning models to predict the optimal hardware configuration for sparse matrix multiplication. Achieved up to 50x improvement in kernel efficiency and hardware resource utilization.

WORK EXPERIENCE

Capital One   Mclean, VA
Software Engineering Intern   June 2024 – Aug. 2024
- Developed a full-stack application for Capital One, automating data registration with a Python Flask backend and Angular frontend, ensuring seamless integration.
- Conducted end-to-end testing and led UI/UX design, iterating based on user feedback to enhance usability and alignment with business needs.

Software Engineering Intern   June 2023 – Aug. 2023
- Designed and built a data pipeline using AWS SNS, Glue, Dynamo DB and Lambda to send 1.5M email messages a year to Capital One credit card customers consolidating their travel itinerary.
- Developed an ML model in the pipeline to predict flight delays with accuracy of 99% and market flight disruption assistance package to ease customer's travel experience.

Amazon   Seattle, Washington
Software Development Intern   May 2022 – Aug. 2022
- Built Cashback Abuse Prevention System (CAPS) in Java and JavaScript to automate the process of identifying 20M bad actors per year, who create multiple accounts on Amazon to abuse cashback promotions and exclude these actors from promotion campaigns.
- Completed end-to-end testing to production and worked with several AWS services like Lambda, AWS AppConfig, DynamoDB, Amazon EventBridge and Elasticsearch to develop the system.

Software Development Intern   June 2021 – Aug. 2021
- Analyzed the operation excellence practices at Amazon and added two new features to an internal tool using Java and JavaScript, capturing two key operational excellence metrics for 400+ teams across Amazon and saved 3 hours per week for engineers.

AWARDS
- First Place at ACM Student Research Competition (SRC) held at MICRO 2024
- Capital One Bank Dean's Scholarship Fund in Computer Science
- State of Maryland Governor's award for academic excellence

SERVICES
- Artifact Evaluation Committee Member MICRO 2025
- Artifact Evaluation Committee Member ISCA 2025
- IEEE Micro Journal Reviewer, 2025
- IEEE Transactions on Big Data Journal Reviewer, 2025
- SPICE Workshop at MICRO2025 Student Volunteer

SKILLS

Java, Python, C, C++, CUDA, OpenMP, Angular, C#, JavaScript, R, Ruby, Ocaml, Rust, SQL, Scala, PyTorch, Spark ML, Spring, Frontend development, Backend development, Computer Vision, Machine Learning, HLS tools, FPGA Programing