Diksha Pal

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EDUCATION

University of Maryland, College Park **May 2026**

B.S. in Computer Engineering

Relevant Coursework: Computer Organization and Architecture, Organization of Programming Languages, Computer Systems, Discrete Signal Analysis, Reverse Engineering

SKILLS

Programming Languages: Java, C, C++, Python, MATLAB, R, OCaml, Rust, x86 Assembly

Technical Skills: Binary Analysis, Reverse Engineering, Linux, GitHub, Jupyter Notebook, Xilinx Vivado, PSpice, RISC-V, React, TensorFlow, PyTorch, Stable Baselines3, StableDiffusion3, Kilosort

EXPERIENCE

FORMAL (Foundations Of Reliable Machine Learning) @ UMD Aug 2025 - Present

Undergraduate Researcher

- Conducting machine learning research on knowledge distillation algorithms, analyzing performance across 5+ datasets and 3+ model architectures, while aiming for 15% to 20% improved robustness of student model
- Implementing and evaluating deep learning models using Python and PyTorch, performing comparative analysis of algorithm performance, and documenting experimental methodology and results for academic publication.
- Applying advanced ML concepts including neural network optimization, model benchmarking, and information theory principles to solve real-world problems in model efficiency and deployment

Computing Catalysts @ UMD (CS Education and Outreach) June 2025 - Present

Computing Instructor

- Delivered lessons on core cybersecurity concepts including network security, encryption, nslookup and wireshark
- Established Raspberry Pi learning environments, debugged and delivered lessons on OS concepts, enabling students to successfully complete diverse projects including LAMP server deployment and password generation
- Mentored a technical bridge program for 30+ incoming students with no coding experience, taught Python basics and app development, achieving 100% student project completion and presentation success rate

Institute for Systems Research @ UMD May 2025 - Aug 2025

Undergraduate Research Assistant

- Investigated electrode optimization strategies for spike sorting performance on high-density microelectrode arrays, analyzing trade-offs between network sampling coverage and signal isolation quality across 2mm x 4mm recording areas
- Built high-performance data pipelines to process 1,024-channel recordings across 26,400 electrodes, converting large-scale data into efficient binary formats to run assays on
- Optimized data throughput by partitioning workloads into configurable batch sizes and n-blocks, enabling efficient utilization of GPU memory hierarchy.

TECHNICAL PROJECTS

Question Answer Calibration System | Technica 2024 Hackathon Oct 2024

- Engineered 6 novel features including named entity recognition and text pattern analysis for a quiz bowl buzzer model, improving buzz accuracy by 12.5% (from 0.32 to 0.36 ratio)
- Processed and analyzed 100k+ quiz bowl questions to develop a logistic regression model that optimizes when to "buzz in" with answers, similar to human quiz bowl players
- Identified capitalization patterns and giveaway phrases as highest-impact features through iterative testing, collaborating with mentors and team members to optimize feature selection.

Learning to Play Atari Games using Reinforcement Learning | Technica 2023 Hackathon Oct 2023

- Implemented DQN and PPO algorithms using Stable Baselines3 to train agents across multiple Atari and MuJoCo environments, analyzing performance through TensorBoard visualizations
- Demonstrated mastery of reinforcement learning workflows through systematic environment configuration, experimental design, and performance analysis

Over Terrain Vehicle (OTV)

Navigation and Mission Sub-Team Jan 2023 - May 2023

- Led navigation subsystem development for award-winning OTV project, achieving 150mm positioning accuracy while navigating multiple obstacles (limbo, log, rumbles) in a 4.0m x 2.0m arena
- Implemented real-time crash site analysis using Aruco markers and computer vision, measuring 270mm x 180mm x 135mm object dimensions within 25mm accuracy
- Won Design Award from 19 finalists for successful integration of navigation, measurement, and safety systems, including wireless data transmission to mission control

ACTIVITIES

Societies: Society of Women Engineers, Women in ECE, Institute of Electrical and Electronics Engineers (IEEE), Society of Asian Scientists and Engineers, Rewriting the Code