

Swastik Agrawal

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EDUCATION

University of Maryland, College Park

College Park, MD

Bachelor of Science in Computer Science and Mathematics: GPA 4.0 (Dean's List)

Aug 2023 – Dec 2026

Relevant coursework: Advanced Numerical Optimization (grad course), Proof-based Linear Algebra, Advanced Calculus, Computational Methods, Applied Linear Algebra, Introduction to AI, Algorithms, Computer Systems, Discrete Structures

TECHNICAL SKILLS

Languages: Python, JavaScript/TypeScript, Java, C, OCaml, Rust

Frameworks & Tools: PyTorch, Flask, React, Pandas, LangGraph, Git, Firebase, MongoDB, PostgreSQL

RESEARCH EXPERIENCE

Student Researcher

Feb 2026 – Present

Dr. Sarah Wiegrefe Research Group

University of Maryland, College Park, MD

- Investigating the performance gap in activation steering between CAA-style behaviors and SAE-derived concepts by controlling for model, layer, dataset generation, and LM judge
- Conducted human vs. LLM evaluation comparative analysis and improved LM judge pipelines for more reliable steerability assessment

Independent Researcher

Feb 2026 – Present

Supervised Program for Alignment Research (SPAR)

Remote

- Developing Circuit Oracle: an agentic pipeline for automated end-to-end circuit discovery, interpretation, and causal hypothesis generation in LLMs
- Conducting jailbreak circuit discovery on Qwen-3-4B and Gemma-2-4b-it against GCG optimized attack prompts

Student Researcher

Jan 2026 – Present

Dr. Fardina Alam Research Group

University of Maryland, College Park, MD

- Co-leading research on training-free AI-generated text detection using signals from letter distributions
- Analysed existing benchmark datasets; extended HC3 with additional models, domains, and temperature settings
- Introduced LD-Score, a complementary detection signal improving AUROC, F1, and Accuracy when integrated with Binoculars and DNA-DetectLLM

Research Assistant

Sep 2025 – Dec 2025

Tubaldi Lab

University of Maryland, College Park, MD

- Designed a multimodal object classification model integrating pressure sensing and visual input for a soft robotic gripper arm
- Developed a communication framework for the UR3e robotic arm, implementing automated trial randomization, sorting operations, and streamlined data collection scripts

Student Researcher Paper: [Link](#)

Feb 2024 – Aug 2025

Risk-Informed Solutions in Engineering Laboratory

University of Maryland, College Park, MD

- Engineered a temporal deep-learning model to impute unavailable data on tropical cyclones, improving the performance of existing shallow approaches by 15%
- Tested temporal model architectures, feature sets, physics-driven approaches and fine-tuning pipelines
- Presented at the ICOSAR 2025, AGU Fall meeting 2024, and at UMD CEE symposium 2024

WORK EXPERIENCE

SWE Intern

Feb 2026 – Present

Stealth Startup

Remote

- Built a virality dashboard tracking competitor and user performance metrics with real-time alerts to drive social media marketing decisions
- Developed a fully end-to-end agentic built an end-to-end automated video creation workflow using Mastra
- Benchmarked SOTA models across use cases

SWE Intern

May 2025 – Dec 2025

Mindgrasp Inc.

Bethesda, MD

- Developed an in-house graph framework for LLM pipelines to implement complex multi-threaded graphical workflows, enabling improved tool calling and response streaming using SSE (reduced user latency by ~ 90%)
- Migrated the codebase from multiple distributed services to a monorepo architecture (reducing operational costs by ~ 40%) and enhanced database schemas to enable feature improvements across 4 company products
- Refined signup and payment funnels through A/B testing resulting in ~ 80% increase in registration rate
- Deployed AWS lambda functions for audio transcriptions and file processing; contributed 500+ unit tests

AI Engineer Intern

Jan 2025 – May 2025

Fetch.ai

Remote

- Developed 10+ agents with sophisticated LangGraph workflows equipped with web search to compile travel options through natural language derived API calls to multiple third party services

Co-Founder and Head of Tech

Jul 2024 – Aug 2025

AI/ML at UMD

University of Maryland, College Park, MD

- Milestones: 600+ members, 5 workshops, 5+ company collaborations, UMD hackathon judge
- Managed the development of a recommendation engine for WISE Cities LLC for website listings using composite scoring based on popularity data, matrix factorization, and keyword search
- Led a research project aimed at building a real-time RAG pipeline with lecture transcriptions to answer queries using a dynamically updated knowledge base (piloted in 4 UMD classes)

SWE Intern

Sep 2024 – Dec 2024

Untethered Labs Inc.

Greenbelt, MD

- Migrated the Node.js company portal codebase from node v12 to v16 incrementally by refactoring code, minimizing clutter, reducing initial load time by 12%
- Implemented an analytics dashboard to monitor tenant usage across enterprise deployments, for real-time metric analysis of key products

PROJECTS

L-LMS (Winner HackMIT) | *React.js, Fetch.ai, Iris DBMS, LangGraph, Flask*

Sep 2024

- Developed a personalized agentic AI study assistant that leverages official course information from Canvas LMS, and user uploaded documents
- Implemented a multi-agent RAG pipeline by curating a LangGraph-based AI engine, minimizing hallucinations
- Designed 2 fetch.ai agents: one allowing users to OCR handwritten notes + miscellaneous study material and the other to send emails to professors using the Gmail API

DenseTeX | *PyTorch, Transformers, Wandb, Git*

May 2024 – Jul 2024

- Designed a novel encoder-decoder transformer architecture to convert images of scientific math equations to LaTeX
- Developed a DenseNet encoder with 2D Positional Encoding, paired with a custom GPT-2 based transformer and an extended RoBERTa-based tokenizer
- Integrated wandb to track test metrics (pplx, BLEU, F1, etc) for the training process

AutoNote | *React.js, Flask, Pinecone, LangChain, Git*

Mar 2024

- Designed a comprehensive study tool as a web application that extracts LaTeX notes from class recordings and enables students to query all their study material
- Implemented Gemini Pro Vision for OCR and conversion to clean LaTeX code, which is then returned as a PDF
- Employed RAG using LangChain to fetch relevant data from a Pinecone vector database

PocketPeds (App Dev Club, UMD) | *React-native, Tailwind, Flask, PostgreSQL, Git*

Feb 2024 – May 2024

- Led the development of PocketPeds, an application to improve pediatric healthcare by helping caretakers calculate safe dosages for pediatric OTC medications using a mobile device
- Developed a robust backend integrating MongoDB, PostgreSQL, JWT authentication and the FDA NDC API
- Created an intuitive frontend for scanning barcodes, scheduling medications, and viewing dosage history

MISC

8x Hackathon Winner: Stanford, MIT, Harvard, GaTech, UMD, Georgetown University, Stony Brook, Nucleate@Pitt