Harsh Desai

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EDUCATION

University of Maryland **Aug 2023 - May 2026**
Bachelor of Science, Computer Science, Minor in Statistics, Astronomy *College Park, MD*
- **GPA:** 3.88/4.00
- **Coursework:** Data Science, Machine Learning, DSA, Graph Theory, Human-Robot Interaction, Software Engineering

EXPERIENCE

UMD Institute for Advanced Computer Studies (UMIACS) **Sep 2025 - Present**
Undergraduate Machine Learning Researcher *College Park, MD*
- Contributing to DynaGuard 2, a dynamic guardrail model to ensure policy adherence for large language models.
- Collected data for the project by analyzing safety-focused datasets (CWEval, RedCode, MT-SEC, PurpCode), resulting in 220K+ samples for training.
- Executed a technical investigation and landscape survey of automatic red-teaming frameworks, de-risking project implementation and generating actionable insights for multiple use cases
- Updated and refined evaluation code to run on security benchmarks, setting up subsequent project phases.
- Synthesized key findings from academic literature and contributed to lab discussions, informing project methodology and experimental design for applied AI safety research

UMD Department of Computer Science **Sep 2025 - Present**
Advanced Data Structures Undergraduate Teaching Assistant *College Park, MD*
- Provided support to up to 290 students during 10 weekly office hours, clarifying B-Trees, KD-Trees, and blockchain concepts, which helped students grasp advanced data-structure theory and improve their coursework performance
- Proctored and graded 7 exams, delivering real-time feedback that enabled students to identify knowledge gaps and improve their understanding of data-structure material
- Assisted students with developing complex data structures such as Scapegoat Trees and Compressed Tries from the ground up, resulting in increased understanding and clarity about speed, memory usage, and applications.

Hack4Impact **Sep 2024 - Jan 2026**
Backend Engineer / Engineering Administrator *Remote*
- Engineered efficient REST and GraphQL API endpoints for multiple tables, improving data access and performance.
- Ensured high code reliability with 80% coverage by writing comprehensive unit and integration tests for REST API and GraphQL API endpoints.
- Defined and implemented scalable PostgreSQL database schemas to streamline data access and integration across 15+ university chapters

Campus Coders Crew at UMD **Jun 2025 - Aug 2025**
Frontend Developer and Designer *Remote*
- Used Figma to design responsive, user-friendly webpages, which improved overall user satisfaction
- Coded and implemented front-end designs into functional webpages using React and Tailwind CSS, resulting in smoother user experiences
- Participated in weekly development sprints, managing tasks and contributing to timely project completion

PROJECTS

Kompression **May 2025 - Jul 2025**
- Developed a Flask web application by implementing the K-Means++ algorithm to quantize image colors
- Improved image processing time by 80% by identifying and resolving performance bottlenecks with NumPy vectorization
- Gained cloud deployment expertise by configuring environments, managing static assets, and troubleshooting production performance challenges on the Render platform, ensuring reliable application uptime and responsiveness.

AREC280 Climate Change Research Paper **Nov 2023**
- Analyzed the impact of climate on Vietnamese rice production using CRUClimate and FAOSTAT datasets
- Developed R scripts to clean, analyze, and visualize time-series data with scatter plots and line graphs.
- Performed hypothesis testing and linear regression to quantify the influence of temperature and precipitation on crop yields, identifying statistically significant correlations with temperature.

SKILLS

- **Languages**: Java, Python, JavaScript, TypeScript, HTML, CSS, R, C, SQL, Matlab, C#, C++, OCaml, Rust, SAS
- **Frameworks**: React, Node.js, Flask, Tailwind CSS, JUnit, Express.js
- **Libraries**: pandas, NumPy, scikit-learn, Matplotlib, Leaflet
- **Tools**: Git, GitHub, Linux, Visual Studio Code, SQLite, RStudio, Docker, Unity, Figma, PostgreSQL, CAD