ADITYA KUMAR

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GitHub ◇ LinkedIn ◇ Personal Website

EDUCATION

Ph.D. in Computer Science, Purdue University — August 2025 - May 2030 (Expected)
Advisor: _Dr. Bedrich Benes_

Master of Science, Computer Science, The University of Arizona — May 2024 - May 2025
Cumulative GPA: _4.0/4.0_

Bachelor of Science, Computer Science, The University of Arizona — Aug 2020 - May 2024
Minor in Statistics and Data Science
Cumulative GPA: _3.976/4.0_
Summa Cum Laude, 4x Highest Academic Distinction for the Academic Year, Global Wildcat Scholar

RESEARCH EXPERIENCE

Graduate Researcher — Aug 2025 - Present
Department of Computer Science, Purdue University — _West Lafayette, IN_

- Joined the lab in August 2025 as a first-year PhD student.
- Currently working with Dr Bedrich Benes to improve both semantic and instance segmentation of point clouds.

Graduate Research Assistant — May 2024 - May 2025
Department of Computer Science, University of Arizona — _Tucson, AZ_

- Collaborated with Dr Joshua Levine to develop deep learning-based volume visualization techniques to enable compressive, interactive, and intuitive analysis.
- Worked on finding alternatives to SIREN-based neural networks for the purpose of compression.

Undergraduate Research Assistant — Oct 2023 - May 2024
Department of Computer Science, University of Arizona — _Tucson, AZ_

- Worked with Dr Christian Collberg on _Tigress_, a code obfuscator for C language that protects against static and dynamic reverse engineering.
- Optimized and advanced a Python based data analysis pipeline for tool validation.

Student Software Developer and Researcher — Apr 2023 - May 2024
Pauli Lab, College of Plant Sciences, University of Arizona — _Tucson, AZ_

- Collaborated with leading scientists to develop high-throughput phenotyping pipelines for data recorded by the world's largest plant phenotyping robot and drones (The PhytoOracle Project).
- Created an interactive visualization dashboard using Streamlit and Python libraries, visualizing 3 years of lab data with Plotly and Open3D.

TEACHING EXPERIENCE

Graduate Teaching Assistant — Aug 2025 - Present
Department of Computer Science, Purdue University — _West Lafayette, IN_

- Conducted weekly office hours and lab sessions for courses including CS 439 (Introduction to Data Visualization) and CS 252 (Systems Programming).
- Assisted in grading and preparing programming assignments, exams, and quizzes, along with managing a small team of undergraduate teaching assistants.

Senior Undergraduate Teaching Assistant Aug 2021 - May 2024

Department of Computer Science, University of Arizona *Tucson, AZ*

- Conducted weekly office hours and supplemental instruction sessions for courses including CSC 101 (Introduction to Programming), CSC 144 (Discrete Math), CSC 210 (Software Development), and CSC 352 (Systems Programming and UNIX).
- Assisted in grading and preparing programming assignments for over 150 students each semester, while ensuring a high standard of academic integrity and support.

PROJECTS

C-Code Deobfuscator and Decompiler: Implemented a CNN model to classify obfuscation techniques applied to binary code, trained on a large dataset of randomly generated C programs with various obfuscations. Utilized Claude Opus' advanced language processing capabilities to decompile obfuscated programs using their classification information. GitHub

Interactive Transfer Function Editor: Developed an interactive D3.js-based transfer function editor for volume visualization, enabling real-time manipulation of color and opacity mappings for scalar volumetric datasets like VTK `.vti` files. Integrated seamlessly with a vtk.js volume renderer to support smooth interpolation and exploratory analysis.

Wordle 2.0: Collaborated with an AGILE team of 4 developers to create a multi-modal, multiplayer version of Wordle using Java's Swing Library. Developed an online leaderboard using MongoDB Atlas and Maven. Demonstration Video

PROFESSIONAL SERVICES

- Presented a session on Data Visualization in the *Scientific Computing & Data Analytics: A Comprehensive Toolkit for Research* webinar conducted by AG2PI, attended by over 100 participants. Webinar

TECHNICAL SKILLS

Languages	Python, Java, C, SQL, MATLAB, HTML, CSS, JavaScript, R
Frameworks & Libraries	NumPy, Pandas, PyTorch, Streamlit, Open3D, OpenCV, Lucene
Technologies	Docker, High Performance Computing, REST, YAML, Git, Maven, AWS, Unity