Aayush Koirala

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Experience

Undergraduate Research Assistant — *Summer 2024*
University of Massachusetts Amherst, (CICS) — Amherst, MA
- Conducted research on Machine Learning (ML) security under the guidance of a graduate leader.
- Utilized Jupyter Notebook to analyze and implement various neural network architectures, including LeNet, AlexNet, VGG, ResNet, DenseNet, and MobileNet.
- Explored the theoretical trade-offs between robustness and accuracy in ML models, and reviewed seminal papers such as "Deep Residual Learning for Image Recognition" and "Theoretically Principled Trade-off between Robustness and Accuracy."

Software Engineer Fellow — *Summer 2024*
Headstarter AI — Remote
- Participated in a 7-week software engineering fellowship focusing on building 5 AI projects, 5 weekend hackathons, and a final project.
- Engaged in interview prep, resume reviews, and received feedback from real software engineers.
- Currently working on a final project aimed at raising $1000+ with 1000+ users.

Fellow — *Summer 2022*
SoarCS — Lowell, MA
- Participated in a pre-semester program, SoarCS, enhancing coding skills and networking with fellow students.
- Attended Red Hat's DevConf.US conference.

Instructor — *Jan 2021 - Sep 2022*
Elevate the Future Massachusetts — Acton, MA
- Taught computer science and business principles to over 300 middle and high school students with a team.
- Led a 6-week introductory Python programming course and introduced data structures concepts.

Personal Projects

Personal Portfolio | *React, Vite, Tailwind CSS* — Summer 2024
- Developed an interactive and visually engaging web application to showcase skills, experiences, and projects. Project available at Aayush's Portfolio.
- Features: Responsive design optimized for both desktop and mobile devices, interactive Navbar with 3-dash dropdown menu on mobile, horizontal scrollable train of technology icons draggable on mobile, smooth scrolling for in-page navigation.
- Technologies: React, Vite, Tailwind CSS, Framer Motion, React Icons

Ohara Manga Library | *Django, PostgreSQL, Python* — June 2023 - July 2023
- Developed a full-stack Django project available at github.com/AKSProjects/mangarep.
- Created a library website using PostgreSQL and Django.
- Managed project with a team using Git and GitHub.
- Features: Database of 24,165 Animes and 67,273 Mangas, genre-based top 100 lists, search functionality.
- Technologies: Kaggle, PostgreSQL 15-3.1, Django, Python scripts for data processing.

Hangman | *C, Linux* — Jan 2023 - May 2023
- Created a Hangman game (GitHub: github.com/aayushkoi/Hangman) using C on Linux.
- Implemented data structures like AVL tree, vector structures, and an associative array.
- Proficient in C Programming, Data Structures, Linux Development, Custom String Handling.

Technical Skills

Technical Languages: JavaScript, TypeScript, C++, C, HTML/CSS, Python, Git, GitHub, Java, PostgreSQL
Languages: English, Nepali, Hindi, Spanish (Intermediate)

Education

Bachelor of Science in Computer Science — *Expected Fall 2025*
University of Massachusetts Amherst — Amherst, MA
- Relevant Courses: Data Structures, Object Oriented Programming, Computer Systems Principles/Assembly, Discrete Mathematics, Reasoning Under Uncertainty, Programming Methodology.