ANMOL RATTAN SINGH SANDHU

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EDUCATION

University of Cambridge PhD, Computer Science (Deferred)

Olin College of Engineering — B.S. in Engineering (Computing), GPA: 3.9/4.0 May 2025

Relevant Coursework: Advanced Algorithms, Software Systems, Computational Robotics, Neurotechnology and ML, Data Science, Collaborative Design, Computer Architecture, Longer Term Software Development

SKILLS

- Python, Rust, Go, C, C++, Bash, JavaScript, SQL, Java, Kotlin, Dart, R, MATLAB
- Git, GitHub, Linux, Docker, React.js, React Native, Ansible, Firebase, ROS, AZ-900

PROFESSIONAL EXPERIENCE

Indico Data Solutions

- **Software Engineer II** Aug 2025 – Present
  - Built a custom heartbeat system for the **async task queue** powering Indico's **agentic decisioning platform**, allowing stuck workers to be detected and recovered automatically.
  - Led the upgrade of microservices to the latest **Python** release, reviewing legacy code for compatibility, and migrating key dependencies such as **Pydantic**.
  - Improved stability by fixing production issues, adding unit test coverage, and supporting deployments with **CI/CD** pipelines and **Kubernetes**.
- **Software Engineer Intern** May 2025 – Aug 2025
  - Contributed bug fixes and reliability improvements across backend microservices.
  - Gained experience with containerized deployments, **CI/CD** workflows, and backend service debugging.

Research Assistant, MIT CSAIL (FutureTech Lab) Jun 2024 – Present

- Researching scaling laws for **quantization in LLMs**, focusing on the tradeoffs between efficiency and accuracy that emerge under different model compression methods.
- Contributing to the **Algorithm Wiki project**, an open resource documenting algorithmic development and complexity trends.

Technical Lead, Senior Capstone Program in Engineering (SCOPE), Olin College Sept 2024 – May 2025

- Collaborated with Boston University and Red Hat to prototype **LLM-powered agents** for personalized reading comprehension tools for K–3 students.
- Designed the foundational infrastructure of the application and implemented the core pipeline integrating **Llama 3.1** on **TorchServe**, a **React/Next.js** front end, and **PostgreSQL** for user data and conversation context.

Researcher, MIT Connection Science Feb 2024 – Dec 2024

- Researched the interoperability of **verifiable credentials (VCs)** and **personal data stores** with Professor Alex Pentland's Connection Science group.
- Helped to create a framework for the "Interoperability of Verifiable Credentials and Personal Data Stores", contributing to standards for trustworthy and decentralized identity management.

Intern, Modular Open-Source Identification Platform (MOSIP) Jan 2024 – May 2024

- Improved the open-source **Bluetooth** credential exchange module (Tuvali) of INJI, allowing a presenter to select from a list of verifiers, enhancing the previous QR code scanning process to connect to verifiers.
- INJI, MOSIP's decentralized credential wallet, enables users to manage and verify **OpenID**-conforming credentials; MOSIP itself is the open-source Aadhaar-inspired ID stack that has helped issue 100M+ digital IDs worldwide.

Full Stack Developer (Volunteer), Community Knights (Non-Profit) Jun 2023 – Dec 2023

- Developed an accessible ride-sharing platform for vulnerable populations with Community Knights.
- Utilized **ReactJS**, **React Native** and **Firebase** to create applications with **CRUD** operations and **RBAC**.
- Conducted UX design interviews to iteratively improve the application.

PROJECTS

- **Rust-EDIS:** a scalable, distributed key-value store built in **Rust**, implementing a reader/writer shard model.
- **Clipboard-Transformer:** a simple tool to transform text in your clipboard. Built in **C++**.
- **Image Segmentation:** separate images into distinct segments using graph cut algorithms and network flows. Built in **Python** with **NetworkX** and **OpenCV**.
- **Huffman Encoding:** a compression algorithm implemented in **C++**.
- **CNN-MNIST:** classifies handwritten digits from the MNIST dataset using only **NumPy** and **Python**.
- **Sudoku Solver:** solves Sudoku puzzles using the **Simulated Annealing** algorithm. Implemented in **Python**.

EMPLOYMENT, LEADERSHIP AND INTERESTS

- Instructor - Advanced Algorithms (Student Led Course)
- Resident Advisor - Olin College of Engineering
- Sub-team Lead - Public Interest Technologies club, Olin College of Engineering
- Vice President - Olin South Asian Student Organization
- Interests - Rock Climbing, Badminton and Swimming