

Soham Jain

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Education

Carnegie Mellon University

B.S. in Computer Science, Concentration in Machine Learning

May 2028

Pittsburgh, Pennsylvania

- **Relevant Courses:** Data Structures and Algorithms, Computer Systems, Functional Programming, Discrete Math, Linear Algebra, Multivariable Calculus, Artificial Intelligence, Machine Learning, Computer Vision, Mobile and Web Application Development

Technical Skills

Languages and Operating Systems: Python, Java, C, C++, HTML/CSS, JavaScript, TypeScript, SQL, MATLAB, Linux, Windows, macOS

Developer Tools: Git, Docker, Vim, VS Code, AWS EC2, MongoDB, Google Cloud, Firebase, Android Studio, Expo, Figma, PostgreSQL

Libraries & Frameworks: React, Vite, Express, Node.js, Next.js, Flask, NumPy, Pandas, TensorFlow, PyTorch, Keras, OpenCV

Experience

Vytal.AI

Software and Machine Learning Engineer

May 2022 – Dec 2024

Alexandria, Virginia

- Used **OpenCV** and **React Native** to develop a smartphone AI application that quantifies brain health in just **30 seconds** via novel eye-tracking software at VC-backed startup.
- Optimized **Python** biometric pipelines and deployed ML models on **AWS EC2** to scale testing to **300+ clinical beta users**.
- Created a head-gaze classification algorithm with **YOLOv8** that achieved **15% higher accuracy** than previous models.

Virginia Tech

Computer Science Research Intern

April 2024 – May 2025

Blacksburg, Virginia

- Spearheaded research with Dr. Atul Mantri on applying Grover's algorithm to solve boolean SAT problems **quadratically faster**.
- Utilized **Python**, **MATLAB**, and **Q#** to build a quantum-classical hybrid algorithm to address the graph coloring problem on a map of the 50 U.S. states, **reducing computation cost by 65%** compared to classical recursive methods.

Projects

RoutineRemind | React, JavaScript, TypeScript, Python, HTML/CSS, Firebase

June 2022 – Present

- Developing **patent-pending** app that uses **NLP** and **audio classification** to create personalized schedules for children with autism.
- Scaling product to over **400 active users** through clinical partnerships and integration in local schools.
- Recognized as **first place in the Congressional App Challenge (top 4%)**; demoed app to Representatives at Capitol Hill.

CMUEats | TypeScript, Vite, React, Vanilla CSS, Elysia, Railway

Aug 2025 – Present

- Implementing live API data from Dining Services into a website that streamlines menus and specials for **10,000+ users monthly**.
- Leading the integration of a geospatial routing system using **REST APIs** and **Apple Maps** to sort dining locations by walking distance.

EyeLS | JavaScript, HTML/CSS, Python, TensorFlow, OpenCV

Aug 2023 – Sep 2025

- Constructed a gaze-tracking application that maps eye movements to click locations with **92% calibration accuracy**, enabling patients with neurodegenerative disorders like ALS to communicate nonverbally while **saving over \$15,000 annually**.
- Awarded **IEEE Technical Excellence** for using **ridge regression** and **Monte-Carlo Kalman Filtering** to refine gaze predictions.

Research & Publications

LapseNet: A Hybrid CNN-LSTM Approach for Accurate and Efficient Vision-Based Fall Detection

Nov 2024

6th International Conference on Robotics and Computer Vision

- Designed a lightweight neural network with **TensorFlow** and **Keras** to detect indoor falls with **99%+ accuracy across four datasets**.
- Earned the **Best Presentation Award** for exceptional oral and poster demonstration (**top 1.5%** of 500+ participants).

A Transformer-Based Approach to Diagnose ALS via EEG Analysis

Feb 2025

17th International Conference on Advanced Computer Theory and Engineering

- Optimized a Transformer-based model on **three A100 GPU instances** to capture spatial-temporal dependencies in EEG recordings, accelerating ALS diagnosis **from 8-15 months to under 2 minutes** while maintaining **98%+ accuracy**.

RexDash: A Dashboard for Analyzing Replica Exchange Molecular Dynamics Simulations

Oct 2023

Journal of Student-Scientists' Research (George Mason University Aspiring Scientists Summer Internship)

- Built the first **Flask** and **HTML** dashboard to standardize metrics for analyzing molecular dynamics simulations' performance.