

Soham Jain

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Education

Carnegie Mellon University

Bachelor of Science in Computer Science

May 2027

Pittsburgh, Pennsylvania

- **Concentration:** Machine Learning
- **Relevant Courses:** Data Structures and Algorithms, Artificial Intelligence, Applied Machine Learning, Discrete Mathematics, Computational Linear Algebra, Multivariable Calculus, Computer Vision, Mobile and Web Application Development, Statistics

Technical Skills

Languages: Python, Java, C++, C, TypeScript, JavaScript, HTML/CSS, SQL, MATLAB, Q#, LaTeX

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

Libraries & Frameworks: React, Vite, Node.js, Next.js, Flask, NumPy, Pandas, TensorFlow, PyTorch, Keras, PostgreSQL, 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 Department of Computer Science

Computer Science and Quantum Computing Researcher

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 MATLAB, Python, 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 a **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 project 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 implementing ridge regression and Monte-Carlo Kalman Filtering to refine gaze predictions.

Coding with Soham Jain | Data Structures, Machine Learning, Python, HTML/CSS, TypeScript/JavaScript

July 2022 – Aug 2024

- Created programming tutorials focusing on web and mobile app development for an audience of **100,000+ viewers**.

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 using 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.