

# 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/C0, TypeScript, JavaScript, HTML/CSS, SQL, MATLAB, LaTeX

**Developer Tools:** Git, Vim, VS Code, AWS EC2, MongoDB, Google Cloud, Firebase, Jupyter Notebook, 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 **30-second evaluations** 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 head-gaze detection 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 in Qiskit and Q#.
- Used MATLAB and Python to build a quantum-classical hybrid algorithm that addresses 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 **500 active users** through clinical partnerships and integration in local schools.
- Recognized as **first place in the Congressional App Challenge (top 4%)** and demoed project to Representatives at Capitol Hill.

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

Aug 2025 – Present

- Integrating live API data from CMU Dining Services into website that streamlines menus and specials for **10,000+ users monthly**.

## Research & Publications

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

6th International Conference on Robotics and Computer Vision

- Designed 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

17th International Conference on Advanced Computer Theory and Engineering

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

### RexDash: A Dashboard for Analyzing the Performance of Replica Exchange Molecular Dynamics (REMD) Simulations

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

- Constructed an interactive Flask and HTML dashboard to visualize REMD simulations of alanine dipeptide, standardizing metrics.

## Leadership & Activities

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

July 2022 - Present

Educational Content Creator

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

### Youth International Digambar Jain Organization

February 2022 - Present

President and Co-Founder

- Lead educational programming for **over 150 students** to teach Jain principles like *ahimsa* (non-violence) and peace.
- Direct fundraising strategy that **secured \$25,000+** to construct a temple for worship and cultural events in Northern Virginia.