Mehul Goel

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Achievements

Bitcamp (2024): Top 3 Hack, Most Innovative Hack
HACK CMU (2023): Best Campus Hack
Microsoft Imagine Cup: MVP Qualifier
AAAI Conference: Top Peer-Reviewed Publication

Technical Skills

Languages: Python, C, C++, Java, JavaScript, MySQL, HTML, CSS, R, MatLab, Julia, Assembly x86, C#, Rust
Frameworks: React, NodeJS, Tailwind, Flask, WordPress
Developer Tools: Git, Docker, FoxGlove, VS Code, XCode
Libraries: OpenCV, Scikit, Tensorflow, PyTorch

Education

Carnegie Mellon University — Pittsburgh, PA
Dean's List - High Honors | *Bachelor of Science in Computer Science, Minor in Machine Learning and Robotics* — *May 2026*
Courses**: Introduction to AI | Introduction to Deep Learning | Data Structures & Algorithms | Linear Algebra | Multivar Calc* — ***4.0 GPA

Lynbrook High School — San Jose, CA
***Valedictorian**, 3 Honor Societies, 2x Club President* — *May 2023*

Experience

15-122 Teaching Assistant — January 2024 – Present
Carnegie Mellon University — *Pittsburgh, PA*
- Leading interactive labs for **60+** students, totaling 120 minutes, teaching fundamentals of coding, C, and data structures
- Held office hours for personalized student support, focusing on debugging complex C programs and conceptual questions
- Working alongside Professors to create collaborative and engaging problem sets to effectively challenge ∼**500** students

MattLab - BioRobotics Lab Research Intern — August 2023 – May 2024
Carnegie Mellon University ○ Apple Inc. — *Pittsburgh, PA*
- Developed **CV implementation** based off ResNet150 to segment internal parts of e-waste iPhones and iPads
- Implemented **SORT Tracker** for classification of parts on conveyor belt at **real-time** with **96%** IOU (Accuracy Metric)
- Used **YOLO V8** to train top-down model to detect screws, on iPhones, iPads, and Apple Watches with **93%** accuracy

ML Performance Modeling Chip Architect Intern — April 2022 – September 2022
D-Matrix ($100 million evaluation startup) — *Santa Clara, CA*
- Developed performance modeling software for silicon development with **97%** accuracy for ML models {BERT, ResNet150, etc.}
- Improved **hardware resource utilization** by 46% by using a weighted round-robin load balancing method
- Created a memory modeling software that modeled memory lanes in proposed silicon, that identified bottlenecks in design

Projects

AuditAI | *Chrome Extensions, Flask, Python, Computer Vision* — April 2024
- Using a custom trained YoloV8 image classification model trained on over 10,000+ images with **98%** accuracy on testing dataset
- Created a Chrome extension based on this model that was deployed on image sites like Reddit and Pinterest
- Beat out most humans on determining if an image was AI generated or not, and won **Most Innovative Hack** against 150+ teams

Braille Score | *Python, ReactNative, HTML, Computer Vision* — February 2024
- **Tartan Hacks** entry, creating a software that can translate music sheets to a braille readable format for the visually-impaired
- Developed image segmentation model based of **YoloV8** and Optical Musical Recognition to translate music app
- Built an accompanying mobile app using **ReactNative** connected to local server for on-the-go image translation and printing

RoboBuggy Software Lead | *Python, ROS, Control Theory, Path Planning* — August 2023 – Present
- Leading a **team of 10** to have an autonomous vehicle pass another one using an MPC controller and custom path planner
- Built an autonomous steering subsystem for vehicle, including custom path planning to avoid obstacles including other vehicles
- Used a depth camera and LiDAR system to identify the location of other buggies within **10cm** accuracy

GlobaLex | *Microsoft Azure, ReactJS, Python, HTML, MongoDB* — February 2024
- Developed real-time translation web-calling software that competed in the MS Imagine Cup and won **$5,000** in tech credits
- Utilized OpenAI's **Whisper** API to create a software that translated between English and Spanish in real-time on 30 second clips
- Built the front-end utilizing **ReactJS** and **MongoDB** that had functioning authentication and performed web calls using **Azure**

MBR Sim Author | *Python, ResNet, BERT, GPT, Matplotlib* — September 2022 – Feb 2023
- Presented paper to over **30 audience members**, passing a rigorous approval period with **2** separate peer-revision trials
- Built universal modeling software for variety of chips to test against **10+** ML Workloads, compatible with CPUs, GPUs, and TPUs
- Modeled memory and performance accuracy of Google TPU and other hardware within **5%** of lab-tested measurements

Eco-Bin | *Python, OpenCV, PyTorch, Javascript, NodeJS, CNN* — September 2023 – December 2023
- Developed image-classification model to sort trash, recycling, and compost; which won **Best Campus Hack** over 60+ teams
- Collaborated with CMU Dining and Environment department to deploy a pilot solution and measure impact throughout the day
- Created a **full-stack web portal** to manage each deployment and allowed a live feed into perception sensor and models

EMonitor | *Python, OpenCV, NodeJS, MongoDB, ReactJS* — June 2022 – Aug 2022
- Built application to monitor mental health on social platforms for **Uber Global Hackathon - 2022**, and qualified for nationals
- Developed FER (Facial Emotional Recognition) model to classify faces into 6 emotions and saw a **95% accuracy** on test dataset
- Trial tested with **43 Participants** for a month, saw a **20% jump** in self-reported mental health improvement using the app