Mehul Goel

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Achievements

Microsoft Imagine Cup: MVP Qualifier
HACK CMU - 2023: Best Hack
AAAI Conference: Top Workshop Paper Published
USA Computer Olympiad: Platinum Ranked

Technical Skills

Languages: Python, C, JavaScript, SQL, HTML/CSS
Frameworks: React, NodeJS, Flask, JUnit, WordPress
Developer Tools: Git, Docker, FoxGlove, VS Code
Libraries: OpenCV, Scikit, Tensorflow, PyTorch

Education

Carnegie Mellon University — Pittsburgh, PA
Distinguished Honor Roll | *Bachelor of Science in Computer Science, Minor in ML and Robotics* — *May 2027*
Relevant Courses**: Introduction to AI | Data Structures & Algorithims | Introduction to Computer Systems* — ***4.0 GPA

Lynbrook High School — Valedictorian ○ San Jose, CA ○ 2023

Experience

15-122 Teaching Assistant — January 2024 – Present
Carnegie Mellon University — *Pittsburgh, PA*
- Teach **60** students the basics of computer science, leading them through self-created practice problems
- Developed interactive extra-help session for students with an online-based component
- Co-developed a queue management software to handle up to **500** students at one time

MattLab WOMBAT Research Intern — August 2023 – Present
Carnegie Mellon University ○ Apple Inc. — *Pittsburgh, PA*
- Developed **CV implementation** based off ResNet to segment parts of e-waste iPhones and iPads
- Created **SORT Tracker** for identification of parts on a conveyor belt at **real-time (>60 FPS)**
- Used **YOLO V8** to train a top-down model to detect screws, on iPhones, iPads, and Apple Watches

ML Performance Modeling Chip Architect Intern — April 2022 – February 2023
D-Matrix ($100 million evaluation startup) — *Santa Clara, CA*
- Developed performance model for chip development with **97%** accuracy on (BERT, RestNet50)
- Improved **hardware resource utilization** by 46% by using a weighted round-robin load balancing method
- Built 50% of the Speed of Light codebase, **solo-developed** a high-level performance modeling software

Projects

GlobaLex | *Microsoft Azure, ReactJS, HTML, MongoDB, Python* — February 2023
- Developed real-time translation web-calling software that won **$5,000** in technology credits from Microsoft.
- Utilized OpenAI's **Whisper** model to create a model with **99%** accuracy on clips less than 30 seconds
- Built the front-end from the ground up, utilizing **ReactJS** and **MongoDB** to create a web-calling app

Braille Score | *Python, ReactNative, HTML, ComputerVision* — February 2023
- **Tartan Hacks** entry, creating a software that can translate music sheets to a braille readable format.
- Developed image segmentation model based of **YoloV8**, that translated an entire sheet of music in real time
- Built an accompanying mobile app using **ReactNative** connected to a web server to utilize model

Eco-Bin | *Python, OpenCV, PyTorch, Javascript, NodeJS, CNN* — September 2023 – December 2023
- Developed an **auto-sorting waste identifier** to sort between trash, recycle, and waste
- Participated in HACK CMU 2023 (60 + teams), and won the **Best Hack**
- Created a **full-stack web portal** to manage each independent trash can with over **500** hits in one week

RoboBuggy Software Lead | *Python, ROS, Control Theory, Path Planning* — August 2023 – Present
- Leading a **team of 5** to create a real-time path planning route using MPC for object detection and avoidance
- Built an autonomous steering software for vehicle, including a control loop that runs in **10 ms**
- Improved accuracy of location data to **10cm accuracy** with digital homography and an RTK base station

MBR Sim Co-Author | *Python, ResNet, BERT, GPT, Matplotlib* — September 2022 – Feb 2023
- **Published research paper** to present in AAAI in 2023, Washington DC
- Building universal modeling software for silicon to test against various ML Workloads
- Models accuracy of Google TPU and other silicon within **5% of actual measurements**.

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 won **Best UI/UX** in the competition
- Developed FER (Facial Emotional Recognition) to detect emotion with a **95% accuracy**
- Trial tested with **50 Patricpants** for a month, saw a significant **20% jump** in self-reported mental health improvement