NEEL GANDHI

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EDUCATION

Carnegie Mellon University
(Aug 2018 - May 2022)

Bachelor of Science in Electrical and Computer Engineering
Minors in Biomedical Engineering and Computer Science
GPA: 3.9, Dean's List

Relevant Coursework (Upcoming*)

15-410 Operating Systems
15-418 Parallel Comp. Architecture
15-462 Computer Graphics
15-213 Computer Systems
16-385 Computer Vision
10-301 Machine Learning
15-281 Artificial Intelligence
15-210 Parallel/Sequential Algorithms
18-240 Digital Systems Design
42-688 Neural Engineering

SKILLS

Programming Languages

Python, C, MATLAB, Java, SML, C++, Assembly, Mathematica, HTML/CSS/JS

Technologies

Google Cloud SDK, Robot Operating System, Android Studio/Flutter (Basic), Unity (Basic), AWS (basic), Flask

HACKATHONS

MHacks 2020 – Facebook "Best Hack Brings the World Closer Together"
TartanHacks 2019 – Finalist and Facebook "Social Impact" award
PennApps 2019 – Goldman Sachs award
Hack This. Help Kids. 2018 – Finalist
HackCMU 2018 – 2nd place for Bloomberg social good award
SteelHacks 2019 - 4th place

ACTIVITES

RoboClub – Data collection for object detection models, trajectory, and electronics for Tartan Autonomous Underwater Vehicle team.
Business Technology Group – Backend developer for club's first website, using AWS and flask.
Science Olympiad – Circuit Lab exam writer for CMU's tournament.

EXPERIENCE

Software Engineering Intern – Pytorch Distributed
Facebook, Inc. | Virtual Internship | May-Aug 2021

Introduced improvements to Pytorch's Distributed Elastic (TorchElastic) framework, contributing to both open-source and internal codebases in Python and C++.

- Implemented a primary address selection protocol to perform synchronization between distributed nodes, enabling direct replacement of a previous higher-overhead system used in thousands of machine learning jobs every day within the company.
- Added support for a file-based backend for synchronization of distributed nodes.
- Built internal logging dashboards to monitor use of the new synchronization mechanism.

15-210 Parallel Algorithms TA
Carnegie Mellon University | Pittsburgh, PA | Aug-Dec 2020

Teaching Assistant for Parallel and Sequential Data Structures and Algorithms.

- Lead recitations, hold office hours, and teach with SML (functional programming language)
- Topics include asymptotic analysis, probability theory, parallel algorithm design, graph theory, dynamic programming, hashing, and concurrency.

Software Engineering Intern (STEP) – Google Shopping
Google LLC | Virtual Internship | May-Aug 2020

Developed a product cataloging platform to connect customers with local businesses impacted by COVID-19.

- Utilized Google Vision AI to create a seamless interface that automatically tags and classifies products from images uploaded by a business owner and allows customers to reverse image search for those products in the catalog (OCR, label and object detection, product image search).
- Full Stack development with Google Cloud App Engine, Google Cloud Datastore, Java Servlets, and HTML/CSS/JS.

Undergraduate Researcher
Carnegie Mellon University | Pittsburgh, PA | Feb 2019-May 2020

Worked in the Biomedical Functional Imaging and Neuroengineering Lab researching on brain computer interfaces (BCI).

- Applied EEG to detect and utilize motor-related brain signals that could be used to control a robotic arm.
- Developed a MATLAB-based software to stream/process EEG data to perform BCI tasks.

PROJECTS

Operating System Kernel CS 15-410 Project

- Designed and implemented an OS kernel, thread library, device drivers, and hypervisor.
- Core components include scheduling, virtual memory, thread and process management, program loading, and paravirtualization.

Graphics Software Package CS 15-462/15-418 Project

- Implemented core components of the Scotty3D graphics software, including interactive mesh editing, realistic path tracing, and dynamic animation, written in C++.
- Accelerated ray tracing with OpenCL GPU and OpenMP CPU programming.

We Have A Car (Mini Autonomous Car) Build18 Hardware Hackathon 2020

- Utilized a ZED Mini camera, lidar, and Jetson Xavier to build a mini autonomous car that performs Simultaneous Localization and Mapping (SLAM) of an unknown environment.

Hide.Me (Steganography Messaging) CS 15-112 Term Project

- Implemented various steganography algorithms to encode and encrypt secret data inside images, all within a messaging application created using python sockets.

Lab.Me (AR Chemistry Lab) TartanHacks 2019 award winner

- Designed an augmented reality chemistry lab with Unity and Vuforia engine, aimed towards providing science lab education to the underprivileged.