David Hwang

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Education

Carnegie Mellon University
Bachelor of Science
Electrical and Computer
Engineering, May 2023

GPA: 3.85

Relevant Coursework:
- Data Structures & Algorithms
- Computer Systems
- Computer Security
- Embedded Systems
- Database Systems
- Logic Design & Verification (SystemVerilog)
- Computer Architecture (RISC-V)

Skills

Languages:
English · Filipino · Intermediate Mandarin · Conversational Hokkien

Programming Languages:
C/C++ · JavaScript/TypeScript · Python · Java · PHP/Hack

Other Technical Skills:
SystemVerilog · SQL · Arduino · HTML/CSS · React · GraphQL

Research and Publications

Peekaboo: A Hub-Based Approach to Enable Transparency in Data Processing within Smart Homes
Co-Author, IEEE Symposium on Security and Privacy 2022

10.1109/SP46214.2022.00142

Work Experience

Meta · Software Engineer Intern   May 2022 - August 2022
- Built the Hack backend and the React frontend for data previews on Download Your Information (DYI) which shows more details about each downloadable category
- Oversaw the experiment for DYI data previews and found that 80% of surveyed users thought the product was useful (compared to 50% in my team's other product)
- Develop the Hack backend and the React frontend for DYI repeat download groups which allows users to easily select data categories they've downloaded in the past.
- Write unit tests for the backend and end-to-end tests with Jest for the frontend to ensure the correctness of the DYI logic at the point it was written and for the future

Dashlabs.ai · Software Engineer Intern   May 2021 - August 2021
- Design a digital platform for our client, the Philippine Red Cross (PRC), for managing clients and insurance memberships, especially for the vaccine rollout overseen by PRC in the Philippines, and increased user membership by over 14000 users since launch
- Develop the frontend of the platform with TypeScript, React, and Next.js and its components, including the administrator panel and a QR code reader for PRC's membership IDs
- Create the backend of the platform with TypeScript, Node.js, Apollo GraphQL, and MongoDB, and design the database schemas for the platform
- Build a script in TypeScript to parse and normalize the application forms of PRC's clients from on-site application forms to fit our database schema

CMU Human-Computer Interaction Institute · Research Assistant   May 2020 - May 2022
- Develop modular operations and applications with Node.js, Python, and Docker that integrate smart home hardware like a smart doorbell through our research lab's privacy centered IoT development framework called *Peekaboo*
- Profile the runtime performance of the applications and modular operations for *Peekaboo*
- Create a privacy-centered framework based on modular NoFlo components/operations for crowdsourcing and aggregating smart home data for use in urban applications

Extracurricular Activities

ScottyLabs Tech Committee · Director of Technology   September 2019 - present
- Lead and oversee the development of the club's tech projects which include both internal apps to support the club and external apps for the CMU community
- Develop and deploy web applications like our internal login API that provides a reusable authentication backend for various projects that need CMU credentials
- Build and manage the DevOps infrastructure for most of the club's web-based applications with Nginx, GitHub Actions, Docker, and Google Cloud Platform

Selected Projects

RISC-V CPU in SystemVerilog · 2022
- Designed a working 8-stage pipelined RISC-V processor in SystemVerilog
- Created a special doubleword cache to minimize memory reads

Settlers of Catan in Python · 2019
- Created a hexagonal coordinate system to handle Catan's "hex and edge grid"
- Built the core features and user interface of the game with Pygame
- Developed a basic AI to play against the user or against other AI players