Kaihan Zhu

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EDUCATIONS

University of Pennsylvania (Penn)   **Expected: May 2023**
   Master of Science in Engineering in Computer and Information Science   Major GPA: 3.77 / 4.0

University of California, San Diego (UCSD)   **Graduated: Jun 2021**
   Bachelor of Science in Computer Science   Major GPA: 3.96 / 4.0

WORK EXPERIENCES

Software Engineer Intern, Amplitude Inc. (San Francisco, CA)   May 2022 - Aug 2022
- Worked with fast switching priorities tasks using **Typescript**, **React**, **NodeJS**, **Python**, **Jest**, **Jenkins**, **GitHub**, etc.
- Extended ingestion pipeline to process extra events from Salesforce Dot Com, provided insights for sales team to analyze and capture more opportunities, using **PostgreSQL**, **AWS Simple Queue Service (SQS)**, **Datadog**, **Docker**, etc.
- Decreasing pages' load time by 88%, optimized fetches using caching with **Extract-Transform-Load (ETL)** on **Redis**, **MySQL**, and **Snowflake**.
- Overhauled **role-based access control** (**RBAC**) completely, which allowed enterprises to specify custom access using **NestJS** and **PostgreSQL**.

Research Scientist, Nanotools Bioscience (La Jolla, CA)   Volunteer: Mar 2020 - Jun 2020, Oct 2020 - Dec 2020,   Paid: Jan 2021 - Jun 2021
- Designed and developed a **Python** GUI application that enabled researchers to batch process videos using methods researched.
- Improved drug discovery workflow and saved Researchers' time by shrinking days of work into just minutes.
- Used **TKinter** and **Pyinstaller** to create a **UI**, **multi-threading** to maximize throughput, **scripting** for **continuous deployment**.
- Implemented **computer vision** and **machine learning** algorithms.

Software Architect, Shanghai Greenpool Environmental Tech Co., Ltd. (Remote)   Sep 2019 - Jan 2020
- Built a personal delivery locker that allows deliveries to be contactless, also provides real-time monitoring system and prevents theft.
- Produced a locker that allows scanning QR codes and lock control, as well as a WeChat client for managing and picking up packages.
- Used touchscreen **Raspberry Pi** embedded Linux system as prototype, **Python**, **Bash Shell**, **GPIO**, **PHP**, **MySQL**, and **WeChat REST API**.

CSE Tutor, University of California, San Diego (La Jolla, CA)   Apr 2019 - Jun 2020
- Held office hours, created and graded assignments and exams, and assisted professor in teaching.

PROJECTS

Google Search Engine Clone (Group of 4)   Feb 2022 - May 2022
- Built a circa.2000 Google search engine composed of crawler, indexer, PageRank, and ranker, with 100000 pages indexed.
- Implemented a lite version of **Apache Storm** and **Hadoop MapReduce** in **Java**, and **distributed crawler** on top along with **Berkeley DB**.
- Programmed an **indexer** using **Spark** with **AWS EMR**, **S3** and **DynamoDB** in **Java**, and a **UI** with **React** in **JavaScript**.

Reddit-Style Social Platform (Group of 3) @group-social.zhukaihan.com   Sep 2021 - Dec 2021
- Built a **React** web application that allows people to join interest groups, post multimedia posts, and chat among each other.
- Designed **wireframes** with **Figma**, **RESTful APIs** with **SwaggerHub**, and **MongoDB NoSQL database** schema.
- Coded both **frontend** with **React** and **JavaScript** and **backend** with **Express**, **Mongoose**, **JS**, and session management with cookies.
- Used **MVC** model and **test-driven development (TDD)** with **unit tests and integration tests** with **Jest** and **Cypress**.
- **Continuous Integration (CI)** with **Travis CI**. **Continuous Deployment (CD)** from **GitHub** onto **Heroku** cloud service.

3D Bombing Game (Group of 6) @bombgame.zhukaihan.com   Mar 2021 - Jun 2021
- Built a multiplayer 3D 3rd-person-view game from scratch with **OOP** principles, including server-client communication and graphics engine.
- Developed the whole **server-client networking** system, server game logic, debugged client graphics, and created the code skeleton.
- Designed and programmed networking with **Asio** framework in **C++** for one server and up to 4 clients with game state synchronization.

Student and Student Housing Application (Group of 11) @ssh.zhukaihan.com   Mar 2019 - Jun 2019
- Built a **cross-platform React Native mobile application** to allow students to find houses for rent without exposing personal information.
- Utilized **noSQL Firebase** as backend, **Bloom filter** for searches, placeholders for UI loading, **Google Sign-In OAuth** for authentication.
- Programmed 70% of this application as a software architect for the team.
- Created detailed **documentation** and **specifications** and **organized biweekly stand-up meetings** to communicate effectively and practice **agile**.

Obstacle Detection (ECE Design Competition) (Group of 10) @od.zhukaihan.com   Mar 2019 - Jun 2019
- Used technologies to help detect obstacles that may cause patients with Parkinson's disease to fall.
- Improved patients' surrounding awareness significantly. **Awarded Popularity Prize** (audiences' favorite project).
- Lead the team to partition data collection tasks, manage collaborative software development, and advise appropriate technical methods.
- Developed an **iOS** data collection software that encodes RGB and disparity map from iPhone, stores in local storage, and exports as a zip.
- Finetuned a **single shot detector (SSD)** using **TensorFlow** and deployed as an **iOS** application with sound alert and visualization.
- Used **UIKit**, **Core Graphics**, **AVFoundation**, and **TensorFlow Lite** with **Swift**, **Objective-C++**, using **XCode** and **CocoaPods**.