# I-No Liao

✉ il10@rice.edu · 📞 832-206-4432 · 🏠 8181 Fannin St Apt 836, Houston, TX 77054
**Portfolio:** http://inoliao.info · ⬡ https://github.com/INoLiao · 🔗 https://www.linkedin.com/in/inoliao/

## EDUCATION

| | |
|---|---|
| **Rice University** | Houston, TX |
| *Master of Computer Science* | *Expected Dec. 2020* |

| | |
|---|---|
| **National Chiao Tung University** | Hsinchu, Taiwan |
| *M.S. in Electronics Engineering; GPA: 4.0/4.0* | *Sept. 2012 – Sept. 2014* |
| *B.S. in Electronics Engineering; GPA: 3.91/4.0* | *Sept. 2008 – June 2012* |

## RELEVANT COURSEWORK

Web Development and Design, Introduction to Database Systems, Object-Oriented Programming and Design, Data Mining, Parallel Programming, Data Structures, Algorithms, Operating Systems, Computer Organization

## PROFESSIONAL SKILLS

| | |
|---|---|
| **Programming** | Python, Java, JavaScript, C/C++ |
| **Web Development** | HTML5, CSS3, jQuery, React, Redux, Node.js, Express.js, REST API, Jest, Enzyme, Unit/E2E Testing |
| **Database Systems** | PostgreSQL, MongoDB, MySQL, Declarative SQL, Imperative SQL |
| **Software Engineering** | OOP/D, Spark, IntelliJ, MVC Design, JUnit, Web Crawler, Linux, Vim, Git, GitHub |

## WORK EXPERIENCE

| | |
|---|---|
| **National Chiao Tung University** | Hsinchu, Taiwan |
| *Research Assistant* | *Aug. 2018 – Apr. 2019* |

- Developed TrackNet, a **deep learning** network based on VGG16 + DeconvNet, for high-speed tiny object tracking applications.
- Achieved **85%** badminton tracking precision in low-cost broadcast videos by the proposed TrackNet.
- Constructed a **MySQL database** to store the retrieved badminton coordinates according to timestamps for faster data utilization.
- Served as TrackNet **project lead** who coordinated the project development and mentored 4 undergraduate students to learn Database Systems, Deep Learning, and Data Mining through on-job training.

| | |
|---|---|
| **MediaTek Inc.** | Hsinchu, Taiwan |
| *RF Algorithm Design Engineer* | *Dec. 2014 – Dec. 2017* |

- Designed Digital Pre-Distortion (DPD) algorithm, implemented by the adaptive correlation and interpolation approximation, to achieve 15% power reduction and 5 times calibration speedup for 4G/5G transceivers.
- Built an **object-oriented** software framework and API to realize DPD verification on smartphones, which shortens the overall verification process by 2 times compared to the conventional approach.
- Coordinated the DPD project development with the verification team and vendors to facilitate the DPD mass production.
- Published 2 US patents, US20180331662A1 and US9985590B2, associated with the DPD algorithm.

## PROJECTS

**Ricebook** – Full-Stack Web Development  *Aug. 2019 – Present*
- Built a fully functioning Facebook-like web application including following friends, posting articles, commenting posts, etc.
- Established front-end user interface based on **React** and **Redux**, realized **REST** requests for client-server communication by **Express.js**, and implemented back-end web service using **Node.js** and **MongoDB**.
- Applied test-driven development methodology using **Jest** and **Enzyme** in **unit testing** to achieve more than **80%** code coverage.

**Pacman Game Clone** – Object-Oriented Design  *Aug. 2019 – Present*
- Served as the **tech lead** of the team responsible for developing interfaces, abstract classes, APIs, and OOD strategies.
- Exploited union, command, strategy, factory, template, and singleton design patterns to realize a fully **object-oriented design**.
- Applied **model-view-controller** architecture to separate the concerns of front-end, controller, and back-end development.

**TrackNet Optimization** – Parallel Programming  *Feb. 2019 – June 2019*
- Achieved **3** times runtime speedup on image frames retrieval from videos by **thread pool** under 6-core operation.
- Obtained **4** times runtime speedup on heatmap generation by **asynchronous multi-core processing** under 6-core operation.
- Adopted systematic **profiling** to identify the proportion of parallelizable and non-parallelizable parts of the program.
- Optimized the trade-offs between program speedup and parallel overhead, including **multi-core communication**, **load balancing**, and **synchronization**, by evaluating the degree of parallelism.

**NBA Game Prediction System** – Machine Learning  *Feb. 2018 – Aug. 2018*
- Developed a **web crawler** capable of scraping pagination data to collect and format NBA box scores from the website.
- Integrated **data cleaning** functions into the crawler to prune invalid data during information retrieval by error detection.
- Achieved **76.8%** NBA game prediction accuracy in 2017-18 playoffs by the proposed composite **2-stage stacked machine learning model** consisting of SVM, GBDT, XGBoost, and AdaBoost.