I-No Liao

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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, AngularJS, Node.js, Express.js, React.js
Database Systems	MongoDB, PostgreSQL, MySQL, Neo4j
Software Engineering	OOP/D, Spark, Model-View-Controller Design, Web Crawler, Linux, Vim, IntelliJ, 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 leader** who coordinated the project development and mentored 4 undergraduate students to learn Database Systems, Deep Learning, and Data Mining through on-job training.
- Won the 2019 best project award from the Ministry of Science and Technology of Taiwan.

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 **AngularJS** framework, realized **routing** for client-server communication by **Express.js**, and implemented back-end web service using **Node.js** and **MongoDB**.
- Applied **model-view-controller** architecture and **object-oriented design** to achieve high maintainability and scalability.

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 **crawler** capable of scraping **AJAX 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.
- Exploited **grid search** and **10-fold cross-validation** to optimize model parameters and improve the prediction accuracy.