Botong Ou

bou@purdue.edu | 765-586-0756 | Personal Website | Github | Linkedin

EDUCATION

Purdue University - Main Campus Sept. 2021 - May. 2024
Master's degree in Computer Information Technology | GPA:3.90/4.00
University of California, Los Angeles (UCLA) Sept. 2019 - May. 2021
Master's degree in Computer Science | GPA:3.83/4.00
Shanghai Jiao Tong University (Top 4 in China) Sept. 2015 - May. 2019
Bachelor's degree in Computer Science | GPA:3.91/4.00

SKILLS

Programming Languages Java, Python, C/C++, Golang, JavaScript, HTML, CSS
Frameworks Django, Nginx, Redis, React, Express, MongoDB, Kubernetes, jQuery, SpringBoot, Flask, Angular
Features Software Development, Database, OOP, Cloud Computing, Deep Learning, Network Programming

WORK EXPERIENCE

RSSys – West Lafayette, Indiana Sept. 2021 - Mar. 2022
Research Assistant

- Proposed the state-of-art Confidential Virtual Machine (CVM) architecture against untrusted cloud infrastructure.
- Feature Development
  * Designed **Slab** memory allocation algorithm for **Library OS** to reduce memory fragmentation.
  * Introduced dual-factor domains to support running applications synchronously at different privilege level.
  * Developed an audit log system monitor to store **~1G** system logs information in a reserved memory region.
  * Incorporated with **Publish/Subscribe** message model to receive peripheral computation resources updates.
  * Supported various runtime for applications including **Redis**, **Nginx** and **OpenSSL** with 10% - 15% overhead.
- The work is currently under the second-round review of **ASPLOS 2023** top system conference.

NESL – Los Angeles, California May. 2020 - Sept. 2020
Research Assistant

- Designed the first edge system that provides secure deep learning inference for mobile and IoT devices.
- Feature Development
  * Deployed **MongoDB** database on edge device to collect data generated locally at the speed of 20G daily.
  * Constructed a centralized broker using **Kubernetes** and deploy it on **AWS ECS** to connect edge mobile device.
  * Leveraged Google's **OpenThread** network library to allow **AD-HOC** communication between cloud containers.
  * Allows **>500** containers to transmit data between each other with only **~80ms** latency introduced.
  * Supported multiple modern ML/DL models to run on the edge devices with **~5%** performance overhead.
- The work is accepted by **IoTDI 2021** top IoT conference and has been downloaded by >**400** people.

PROFESSIONAL EXPERIENCE

Blog Posting Platform | Individual Project Aug. 2021 - Feb. 2022
Project Leader

- Adopted **Django** to construct the web server for summarizing news and topics collected daily from CNN.
- Utilized **React.js** to construct web pages to display the articles stored on the server with **RESTful APIs** request.
- Optimized the backend server with **jQuery** to achieve **AJAX** communication for users to retrieve article comments without refreshing the whole page. This increases the response time from server by ~45%.
- Introduced **OAuth2.0** authorization to allow third-party users to log in using WeChat token to access private articles.

Online Instant Messaging Platform | Individual Project Jan. 2021 - Jun. 2021
Project Leader

- Employed **Firebase** and **React.js** to construct an online instant messaging platform for users to send messages.
- Leveraged **WebSocket** protocol to support long-term connection and reduce redundant HTTP requests by 90%.
- Integrated **WebRTC** with Firebase to allow real-time peer-to-peer video chatting between users with ~10ms latency.
- Cooperated with **Docker** container to hold message histories in the cloud for accessing from different locations.