

EDUCATION

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

GPA 3.75/4.00

Master of Science, Civil Engineering

May 2016

SOUTHWEST JIAOTONG UNIVERSITY, CHENGDU, CHINA (HONOR STUDENT)

GPA 3.78/4.00

Bachelor of Science, Civil Engineering

June 2014

SKILLS

Programming/tools: • python • TypeScript • Java • Matlab • React • NodeJS • SQL • MongoDB • Git

Technical Skills: • Algorithms • Data Structures • Machine-Learning • Object-Oriented Programming

PROJECTS

KAIPLACE [kaiplace.web.app](#) – A Photo Sharing Social Networking Service (Web/IOS/Android)

Front-end (deployed on Firebase Hosting): React, CSS

Back-end (deployed on Heroku): NodeJS, Express

Database: MongoDB, Mongoose

Image Storage: Amazon S3, AWS-SDK

- Implemented **React SPA** front-end and **NodeJS/Express** back-end with **RESTful** API to provide smooth social networking service for customers.
- Designed **schema** models for the business logic of Customer-Oriented Networking system to support all the functionalities and connected to **MongoDB** database using **Mongoose**.
- Managed user **authentication** and **authorization**: Encoded user password and compared **hashed** password using **bcryptjs**; Authorized user with **JWT** stored in browser local storage which would expire in certain period.
- Facilitated photo uploading experience by auto-filling required fields, such as date taken and location, by extracting EXIF metadata and then fetching **Google Reverse Geocoding API** and **Bing Time Zone API**. On server-side, utilized the extracted data to further organize the photos based on time and location.
- Reduced image size using **imagemin** and stored images to **Amazon S3** with the help of **AWS-SDK**.

PROFESSIONAL EXPERIENCE

WALTER P MOORE, WASHINGTON DC – A \$114M/year multinational engineering consulting firm

Structural / Software Engineer

Feb. 2018 – Jan. 2021

- Develop digital workflows and tools to expedite project delivery process by automating engineering tasks, reducing repetitive work, improving productivity and efficiency of the entire company.

KEY PROJECT: STEEL CONNECTION DESIGN AUTOMATION (Major programming language: **python**)

The project consists of 4 phases: A) Data Extraction, B) Analysis and Bucketing, C) Design Automation, and D) Result Visualization, reducing connection design project timeline by **40%**.

- Developed add-ons for Autodesk Apps using python, **pyRevit** and **Revit API** to read/write user-specified data via .csv files, and to perform **version comparison**, saving **20%** of manual-comparing efforts.
- Designed **classification** rules to identify and bucket joints into qualified steel connections. Improved classification algorithm for large-scaled 3-d models with **k-d tree** data structure and **nearest neighbor searching** which reduce runtime by **70%**.
- Implemented service which automates the connection design process by **auto selecting** the most eligible design template and **optimizing** the design parameters based on the **dynamical** configuration setup per customer requirements, reducing **90%** of manual design efforts, about **80 hours** per project.
- Combined and pushed design results to Tekla BIM model via .csv file and visualized detailed connections in 3-d simulation, demonstrating all plates and bolts using **Tekla API**.

PUBLICATIONS

Published 3 journal articles and 2 conference proceedings. Made presentations at multiple conferences.

- 2018 Transportation Research Record. Vol. 2672, pp. 85-95 [doi.org/10.1177/0361198118784382](#)
- 2018 Joint Rail Conference. Paper No. JRC2018-6154 [doi.org/10.1115/JRC2018-6154](#)
- 2017 Transportation Research Record. Vol. 2607, pp. 33-42 1ST author [doi.org/10.3141/2607-06](#)
- 2016 Joint Rail Conference. Paper No. JRC2016-5802 1ST author [doi.org/10.1115/JRC2016-5802](#)
- 2016 Transportation Research Record. Vol. 2545, pp. 36-45 1ST author [doi.org/10.3141/2545-05](#)