Zehao Xu

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EDUCATION

University of California, San Diego   *M.S. in Computer Science*   Sep. 2019 – Dec. 2020

Zhejiang University   *B.E. in Automation*   Sep. 2015 – June 2019

- Overall GPA: 3.9/4.0 • Ranking: 3/121 • Major GPA: 4.0/4.0
- Relevant Coursework: Data Structure, Object-Oriented Programming Technology, Data Analysis and Algorithm Design, Computer Networks, Principles of Database Systems, Software Technology, Linux Application.

TECHNICAL SKILLS

- **Languages:** Java, Python, C/C++, JavaScript, HTML/CSS
- **Tools/Frameworks:** React.js, Redux, Node.js, Express, Spring, Bootstrap, Sass, Git, GTest/GMock, TensorFlow
- **Databases:** MongoDB, MySQL

WORK EXPERIENCES

Hangzhou Hikvision Digit Technology Co., Ltd (C++ & React.js & Express & Node.js)   Hangzhou, China

Software Engineer Intern, Mobile Robot Department, Point Cloud Team   Oct.2018 - Jan. 2019

- Developed a point cloud visualization dashboard web application based on MVC for rendering point cloud images and parameters to provide data-driven references for upper management, which was used by **10+** teams.
- Created the front-end interface using **D3.js** and **React.js** with Context API for comprehensive data visualization.
- Built backend service using **Node.js**, **Express** framework, with **MongoDB**, and built authentication API with **JWT**.
- Designed a point cloud preprocessing tools that performs denoising of input signals using C++ and PCL.
- Implemented SURF and SIFT feature detection algorithms and compared the time cost of computing descriptors.

PROJECT EXPERIENCES

Project Management Web Application (React.js & Redux)   July 2019 - Aug. 2019

- Designed responsive layout structure with Flexbox and beautified UI with **React Bootstrap** components.
- Maintained the large stylesheets using Sass and CSS Modules and customized the default search bar style.
- Built the front-end interface using **React.js** and managed the whole states of the application using **Redux**.
- Created a mock back-end using Json-Server to get fake REST APIs and server responses for front-end developing.

Model-based Trajectory Optimization with Nonlinear Programming (C++ & Python)   Prof. Tao Gao

Research Assistant, University of California, Los Angeles   July 2018 – Sep. 2018

- Researched on data-driven trajectory optimization method for feeding large-scale nonlinear optimizer IPOPT.
- Extracted the constrain function from physics engine Mujoco and calculated the violation with numerical methods.
- Designed a data visualization module that can interactively render 3D trajectory animations using OpenGL.
- Optimized the calculation of Jacobian matrix based on profiling data and improve cache performance by **40%**.
- Wrote unit test using **GTest/GMock** framework in C++ with rigorous practice to maintain test coverage above **90%**.

Diseases Diagnosis with YOLOv3 Model on Chest X-Ray Images (Python)   Prof. Jiangang Lu

Graduation Project   Mar. 2019 - June 2019

- Adjusted YOLOv3 model to medical images and implemented K-means cluster algorithm to get better anchors.
- Implemented adaptive learning rate scheduler based on real-time loss to reduce learning rate on plateau.
- Designed 3-level training strategy based on the network structure and finally improved the recall rate of Cardiomegaly to **92%** and meanwhile maintained a relatively high precision rate.

Self-designed Drone Autopilot Based on Computer Vision (C++ & Python)   Prof. Dongqin Feng

Team Leader, Micro Aerial Robot Team Laboratory, Zhejiang University   Jun. 2016 –Jan. 2018

- Developed key modules of embedded flight control system on a self-designed flight controller.
- Trained CNN model in TensorFlow and migrated to a real-time compatible solution based on YOLOv3 model.
- Conducted secondary development on open source flight controller Pixhawk to achieve vision-based navigation.