Zijian Liu

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Waterloo, ON, Canada

EDUCATION

- **University of Waterloo** — Waterloo, ON, Canada
  Master of Engineering in Electrical and Computer Engineering, 92% — *May 2019 – Aug 2020*
- **Beihang University** — Beijing, China
  Master of Engineering in Computer Technology, 85% — *Sep 2016 – Jan 2019*
- **Beihang University** — Beijing, China
  Bachelor of Engineering in Computer Science and Technology, 80% — *Sep 2012 – Jul 2016*

EXPERIENCE

- **TrunkTech Co. Ltd.** — Beijing, China
  Software Engineer Intern — *Sep 2017 - May 2018*
  - Built convolutional neural network models for object detection in autonomous driving scenarios using TensorFlow. Models utilize a single-stage pipeline to achieve real-time detection rate up to 60 frames per second, with high accuracy about 90% for vehicle detection and pedestrian detection.
  - Developed a visual navigation system based on visual fiducial references. The system is deployed on autonomous vehicles to provide robust navigation services using computer vision techniques when GPS signal is lost.
  - Implemented a simulator to trace and replay vehicle status in HD maps using the RViz tool of ROS (Robot Operating System). This simulator helped my colleagues to test the planning and decision-making system of autonomous vehicles offline.

PROJECTS

- **Campus News Aggregator (Back End)**: Built the back end that provides services for a campus news aggregator app using Flask with MySQL. Designed and implemented RESTful APIs, the database system, and web crawlers that fetch data from the campus website.
- **Spotify Charts Generator**: A full stack Node.js app that creates and periodically updates playlists of daily top songs for Spotify users. The front end is built with React plus Redux. The back end is based on Koa and Redis.
- **3D Object Detector (Master's Thesis)**: Built a real-time 3D object detector with deep learning techniques. This detector proposed a novel approach that adopts feature fusion on RGB images and point clouds to improve detection accuracy.
- **mEDC (Android Application)**: Designed and developed a mobile version of an electronic data capture (EDC) system to collect clinical data in clinical trials.
- **MIPS CPU Implementation**: Implemented a multi-cycle 32-bit MIPS CPU in Verilog, supporting instructions for ALU, shifting, data loading/storing, jump and branch.
- **C0 Compiler**: Implemented a compiler in C. The compiler supports C0 language with basic functionalities of grammar analysis, error processing, stack management and code optimization.

RELEVANT SKILLS

- **Programming Languages**: Python, JavaScript, C/C++, Java
- **Techniques**: Web Development (Node.js, React, webpack, Koa, Flask), Database Systems (MySQL, Redis), Deep Learning (TensorFlow), Computer Vision (OpenCV, Object Detection), ROS, Data Analysis (Machine Learning, Data Visualization), Android Development, Linux, Git