

ZHIYANG LIU

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🎓 EDUCATION

Northeastern University Boston, MA GPA: 3.9/4.0 Sept 2017 – Dec 2019

Master of Science in Computer Engineering

Courses: Algorithms, Computer Systems, Database Management Systems, Data Mining Techniques, Machine Learning, Advanced Computer Vision, GPU Programming, Robotics Sensing&Navigation

Beijing University of Posts and Telecommunications Beijing, China GPA: 3.5/4.0 Aug 2013 – June 2017

Bachelor of Engineering in Electronic Information Engineering

Courses: C++ Programming, Data Structures, Python Programming, Computer Networks, Software Testing, Web Development, Embedded Operating System, Micro-processor and Interface Technology

⚙️ TECHNICAL SKILLS

- **Programming Languages:** C, C++14, Python, TypeScript, C#, Bash, Matlab, SQL
- **Development:** Linux, Socket, OpenCV, Intel TBB, ONNX, PyTorch, ROS, CUDA, Django, MySQL

👤 WORK EXPERIENCE

Motorola Solutions Somerville, MA Feb 2020 – Now

Software Engineer C++14, Python, Bash, OpenCV, ONNX Runtime, Intel TBB, Protobuf

- Develop **AI Video Analytics** software for Avigilon's product line of cameras and appliances running **Linux**.
- Develop **C++** APIs and implement interprocess communications that interface platform-level software.
- Productize **computer vision** and **machine learning** algorithms, deploy CNN model with **ONNX Runtime**.
- Develop tracking **social distancing** feature for COVID 19.
- Write **multi-threaded** C++ code with parallel framework **Intel TBB**.
- Maintain and improve firmware build systems using **Bash**, **CMake**, **Docker**, and **Python**

6 River Systems Waltham, MA Jul 2018 – Dec 2018

Software Engineer Intern C++, TypeScript, Python, ROS, OpenCV, CMake

- Worked in **Vision** team. Wrote **C++** to develop **ROS**(Robot Operating System) on **Linux** on Nvidia TX2.
- Used **C++** and **OpenCV** to develop a **barcode scanning** feature.
- Wrote **Python** to develop testing pipeline, analyze the performance with **Numpy** and **Matplotlib**.
- Configured and deployed projects and staging environments with **Git**, **Jenkins**, and **Docker**.
- Finally **Reduced** the scanner cost **by 70%** with our self-design scanning system.

🔧 ACADEMIC PROJECTS

Northeastern University Boston, MA

Search Engine for Q&A website Python, Django, Scrapy, Elasticsearch, Selenium June 2019 – Jul 2019

- Built a distributed crawler based on **Scrapy**, crawling data from Zhihu.com.
- Stored crawled data in **Elasticsearch**. Implement fuzzy search and completion suggester.
- Used **Django** to build an Elasticsearch engine back end. Implement searching, search history, and hot searches features.

Trash Detection and Fast Segmentation Python, PyTorch, Mask R-CNN, YOLO Feb 2019 – Apr 2019

- Applied a **VGGNet** to classify and added a bounding box regression branch to localize the single trash object.
- Accelerated **Mask R-CNN** speed by **3%**, by incorporating **YOLO's** feature maps and bounding boxes to it.

Pedestrian Detection and Tracking Matlab, ROS, K-means, Octree, Optical Flow Mar 2018 – Apr 2018

- Used **Octree** structure to split and merge the point clouds data for object detection.
- Removed the stationary environment points, and applied **K-means** to do the object classification.
- Applied derivative filter and **Optical Flow** method on image data to detect motions.

Beijing University of Posts and Telecommunications Beijing, China

Musiccast C++, Socket, pthread

Mar 2017 – Apr 2017

- Implemented Clients and Servers with **C++ socket** programming.
- Used **pthread** for multi-thread programming, protecting the access to the shared data.