Yunpeng Xu

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WORK EXPERIENCE

Senior Software Engineer II - Perception, Motional, Pittsburgh, PA   Mar. 2020 - Present

Project: **Traffic Light Detection System**

- Led a team of 3 engineers to bring up traffic light detection system from scratch, including requirement gathering, on-board pipeline design/implementation, and successfully deployed on the IONIQ 5 platform.
- Optimized the traffic light classification network training/evaluation pipeline, and boost the performance using different techniques.
- Conducted extensive design doc and code reviews to ensure the work delivered by the team is of high quality.

Project: **Radar Unfolding Algorithm and GT Regression System**

- Developed a non-tracker based radar unfolding algorithm by using data association between two consecutive scans.
- Designed and implemented a ground truth sub-system to evaluate the performance of two radar algorithms: radar clustering and range rate unfolding.

Perception code release manager : defined code development process, coordinated with team leads to ensure the delivery of quality package releases; Perception code yellow project leader.

Senior Software Engineer - Software Infrastructure, Aptiv, Pittsburgh, PA   Feb. 2018 - Feb. 2020

Project: **Radar/Camera Sensor Reader Pipeline**

- Developed and optimized radar/camera readers through its iterations, and integrate them into the perception system.
- Developed tools to help analyze data collected from radar sensor systems.

Project: **On-board Map APIs**

- Core contributor for designing & developing the next-generation, high-performance map infrastructure which provides real-time access to mapping database and supplies spatial data.
- Utilized various caching techniques to implement highly optimized queries on a scale from micro to tens of nanosec.
- Designed and implemented Map API performance analysis pipeline using Google Benchmark.

Designed, implemented and integrated the black channel framework for message infrastructure to detect message transmission errors (tampered, spoofed, corrupt, missing, etc.) for infrastructure certification stack.

Research Assistant, CyLab, Carnegie Mellon University, Pittsburgh, PA   May. 2017 - Aug. 2017

- Built an OpenCV-based real-time moving object detection application with four fisheye cameras on NVIDIA TX1 and TI TDA2x ADAS platforms, successfully brought up the system and deployed it on a real vehicle.
- Evaluated application performance, decreased each frame's processing time by 23.5% after optimization using CUDA.

System Application Engineer, Ambarella Inc., Shanghai, China   Oct. 2015 - Jul. 2016

- Designed and implemented a smart rate control library for Ambarella's S2L and S3L SDK, supported AVC/HEVC.
- Efficiently improved video compression ratio while maintaining video quality, later ported to Apple's HomeKit service.
- Designed and implemented Netlink module to transfer messages between kernel and user-space process.

Embedded Software Engineer, Galaxycore Inc., Shanghai, China   Jul. 2014 - Sep. 2015

- Core Linux device driver developer for Galaxycore's video surveillance sensor under Linux and RTEMS systems.

SKILLS

Programming Languages: C++, Python > C, Java, Bash, Matlab
Frameworks: TBB, CUDA, PyTorch, ROS, Google Benchmark, Android, OpenCV, ISPC
Skills: Computer Vision, Deep Learning, Map APIs, Message Infrastructure, Autonomous Systems, Computer Architecture, Embedded system
Tools: Git, Bazel, CMake, Conan, Easyprofiler, Gtest, GDB, Scrum, Jira, LaTeX

EDUCATION

Carnegie Mellon University, School of Computer Science   Pittsburgh, PA
Master of Science in Software Engineering   Sep. 2016 - Dec. 2017
University of Science and Technology of China   Hefei, China
Master of Biomedical Engineering, Medical Device   Sep. 2011 - Jul. 2014
Bachelor of Electronic Information Science and Technology   Sep. 2007 - Jul. 2011