

EDUCATION

Carnegie Mellon University, School of Computer Science

Master of Science in Embedded Software Engineering, QPA: 3.51/4.0

Pittsburgh, PA

Sep. 2016 - Dec. 2017

- Real-Time Embedded System, Parallel Computer Architecture and Programming, Introduction to Embedded System, Introduction to Computer Systems, Architectures for Software Systems, Mobile Application Development

University of Science and Technology of China

Master of Biomedical Engineering, Medical Device, GPA: 86.03/100

Hefei, China

Sep. 2011 - Jul. 2014

Bachelor of Electronic Information Science and Technology, GPA: 86.42/100

Sep. 2007 - Jul. 2011

EXPERIENCE

Research Assistant, Carnegie Mellon University, Pittsburgh, PA

May. 2017 - Aug. 2017

- Built an OpenCV-based moving object detection application with mono fisheye camera on Nvidia TX1 platform.
- Evaluated application performance, improved 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 developers for Galaxycore's video surveillance SOC.
- Implemented device driver for digital imaging sensors, and AVC and JPEG decoding modules using V4L2 framework.
- Optimized device driver for image signal processing (ISP) and AVC encoding modules based on V4L2 framework.

PROJECTS

Real-Time Task Reservation Framework (C, Android), Pittsburgh, PA

Sep. 2016 - Nov. 2016

- Designed and developed a task reservation and enforcement framework including kernel modules, system calls, sysfs interface and Android Java Native Interfaces for task admission control on Nexus 7 tablet.
- Implemented fixed-priority processor scheduling algorithms for multi-processors using task partitioning heuristics.
- Managed energy consumption of real-time tasks by implementing power management algorithms.

Parallel Optimization (C/C++, CUDA), Pittsburgh, PA

Apr. 2017 - May. 2017

- Designed and implemented a parallel graph renderer on CUDA, which efficiently manipulated data structure in GPU, but still maintained operations' order and atomicity, with nearly 16x speedup.
- Improved graph processing algorithms (Pagerank, BFS, etc.) in OpenMP with fork-and-join model, and distributed the solution across a cluster of machines by MPI.
- Designed an elastic web server with 10 machines minimizing cost and latency for different workloads, successfully meeting the requirements of 98.8% tasks.

ROS Reconfiguration Framework (C++, ROS), Pittsburgh, PA

Jan. 2017 - Aug. 2017

- Led the team to design a reconfiguration framework that allows users (ROS application developers) to swap navigation and control algorithms and parameters being used in the robot at runtime.
- Created a model that depicts the designed framework protocol and verified it using Promela and LTL property.
- Implemented all core features (reconfigure framework, node dependency) individually and performed peer reviews.

Easy Order (Java/Python, Android/Django), Pittsburgh, PA

Jul. 2017 - Aug. 2017

- Led the team to design and develop a cross-platform meal delivery application for Chinese takeout, integrated with meal ordering, meal tracking and payment features.
- Built all user interfaces using Android layouts, implemented core features and interaction with RESTful APIs.

Dynamic Storage Allocator (C), Pittsburgh, PA

Jun. 2016 - Jul. 2016

- Implemented a Dynamic Storage Allocator including malloc, free, realloc and calloc interfaces.
- Compared three free blocks organization strategies' performance: implicit free list, explicit free list, segregated free list.
- Achieved 78% memory utilization over 29 cases using segregated list, first fit, splitting and coalescing after block freed.

SKILLS

Programming Languages: C/C++, Java > Python > Javascript > Bash, Matlab

Linux Development: Device driver, Kernel module, Task reservation & power-aware algorithms, Video Codec

Frameworks: ROS, CUDA, Android, V4L2, OpenCV, OpenMP, MPI, ISPC, Django, Bootstrap, React

Tools: Git, Makefile, GDB, Repo, Scrum, JIRA, Markdown