Yunpeng Xu

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EDUCATION

Carnegie Mellon University, School of Computer Science Pittsburgh, PA
Master of Science, Information Technology *Dec. 2017 (expected)*

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

University of Science and Technology of China Hefei, China
M.S. in Biomedical Engineering, Medical Device *Jul. 2014*
B.S. in Electronic Information Science and Technology *Jul. 2011*

EXPERIENCE

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

• Designed and implemented a smart rate control library, efficiently improving video compression ratio while keeping video quality for Ambarella's S2L and S3L SDK, supporting AVC/HEVC, later ported to Apple's HomeKit camera service.
• Designed and implemented Netlink module to transfer message between kernel and user-space process.

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

• Worked as one of the core Linux device driver developers for Galaxycore's video surveillance SOC.
• Implemented the Linux device driver for digital imaging sensors like OV2710, AR0130, and AVC and JPEG decoding modules using video for Linux two (V4L2) framework.
• Maintained and optimized the Linux device driver for image signal processing (ISP) and AVC encoding module based on video for Linux two (V4L2) framework.

PROJECTS

ROS Reconfiguration Framework, Software Engineering Practicum (C++, ROS) Jan. 2017 - Present

• 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 framework protocol, node dependency and verified it using Promela and LTL property.
• Implemented all core features (ROS wrappers, node dependency) individually and performed code reviews for peers.

Easy Order (Java/Python, Android/Django) July. 2017 - Present

• Conceptualized, designed, developed and deployed a mobile application for Chinese takeaways that allows customers to order, track and pay dishes and retailers to post daily dish menu.
• Built user interface using Android layouts, wrote unit tests for mobile code and debugged critical application issues.

Parallel Galaxy Evolution Simulator (C/C++, CUDA) Apr. 2017 - May 2017

• Implemented a galaxy evolution simulator using both Barnes-Hut algorithm and Morton-Code algorithm.
• Both algorithms achieved more than 10x speedup by using performance bottleneck analysis and CUDA acceleration.

Resource Reservation Framework in Linux Kernel (C, Linux Kernel/Android) Sep. 2016 - Nov. 2016

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

Cookyourself (Python/Javascript, Django/AWS) Nov. 2016

• Designed, implemented and deployed a food recipe exploring website using Scrum software process.
• Designed front-end page layouts using Bootstrap/CSS, and responsive interaction using jQuery/React.
• Implemented back-end features including recipe filter, shopping list display and sending to users via email.

Dynamic Storage Allocator (C) Jun. 2016 - Jul. 2016

• Implemented a Dynamic Storage Allocator including malloc, free, realloc and calloc interfaces.
• Implemented and compared performance of different free blocks organization strategies including implicit free list, explicit free list, segregated free list.
• The final allocator using segregated list, first fit, splitting and coalescing after block freed achieved an average of 78% memory peak utilization over 29 tests.

SKILLS

Programming Languages: C/C++, Java > Python > Javascript, HTML/CSS > Shell, Matlab
Linux Development: Device driver, Task scheduling algorihtms, Video Codec library, Kernel modules
Software Development: Vim, IntelliJ, Git, GDB, Repo, Scrum, JIRA