+86 18910958642
liuzhiyou.cs@gmail.com
Blog: blog.seemsfunny.com, easyhard.github.io
Github: https://github.com/EasyHard

Zhiyou LIU

Education

2009-2013 Bachelor of computer science, Peking University, China

2013-2016.9 Master of computer software and theory, Peking University, China (pursuing)

Internships

Redhat kernel QA Intern — During RHEL6.3's releasing process, I ran test suites of kdump and perf, and wrote regression test cases for virtual memory management subsystem.

Hulu Software Developer Intern — Wrote a highly configurable, reliable and high performance NodeJS library for user token validation and revoking. Now it is launched on Mozart, one of Hulu's most busy backends.

Projects

VURD[1] — A LLVM IR based static race detector, was completely implemented by me. Using inter-procedure analysis, like point-to analysis, lock state analysis and some other data-flow analysis, it detects potential unprotected accessing of memory location shared between threads.

porting ftrace[3] to Unicore32[2] — ftrace is a kernel profiling feature. I ported the HAVE_DYNAMIC_FTRACE feature to Unicore32's kernel tree, by referencing the implementation on x86, and understanding stack frame and calling convention of Unicore32's ABI.

dpv(ongoing)[5][6] — Side project. Added keyword and stack tracing in a JavaScript interpreter. The tracing information from the interpreter is used to visualize dynamic programming solution.

dodidota(closed)[4] — Side project. A website that automatically gathers videos and tournament information and links videos with matches. Built using ExpressJS and MongoDB.

minic — Course project. A MiniC to Unicore32 toy compiler. I implemented the IR to assembly translation, including some data-flow analysis, optimization on IR and registers allocation. The compiler is significantly faster than gcc's -O0 on quick sort.

JOS — Course project. Implemented a single CPU x86 operating system, with bootstrap from MBR, virtual memory management and process schedule.

Skills

Basic Knowledge — Solid background knowledge and practical experiences on OS, compiler, computer architecture, complexity theory, and web development.

Programming — Practical skills on software development in C and NodeJS. I also wrote lots of course projects with C and won a few first prizes in TopCoder's Assembly contest with NodeJS. Also familiar with Python, Shell and Linux Userland. Basic knowledge on Linux kernel.

Data Structure and Algorithm — Familiar. Won a first prize of National Olympiad in Informatics in Provinces at Highschool, an algorithm contest. Good at dynamic programming and searching technology.

CUDA — Familiar. Won a third-class prize in Nvidia's college CUDA programming contest, solving single source shortest path in real road graph with some low-level optimizations.

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[1] https://github.com/EasyHard/vurd
[2] ISA designed by MPRC, a CPU research group of PKU, the ISA is similar with MIPS.
[3] kernel_source/Documentation/trace/ftrace-design.txt
[4] https://github.com/EasyHard/dodidota
[5] https://github.com/EasyHard/dpv/tree/gh-pages
[6] http://easyhard.github.io/dpv