

Joel Agnel Fernandes

16+ years of systems software development experience.

EXPERIENCE

Principal Engineer - NVIDIA, Virginia

2025 - PRESENT

Working on GPU software, device drivers, and firmware. CUDA performance for AI workloads. Systems optimizations for Grace Blackwell. Upstream Linux kernel code maintenance of RCU subsystem.

Staff Software Engineer - Google, Virginia

2016 - 2025

Worked on Linux kernel RCU and scheduler fixes and improvements for Android and ChromeOS Linux. Helped out with Linux kernel stability testing for upstream RCU. Upstreamed mremap(2) changes to the Linux kernel causing several-fold performance improvements to the new Android garbage collector. Developed and upstream Core scheduling features in the Linux kernel for hyper-thread isolation. Worked on C++ code development for the open source Chrome browser project, made performance improvements to Chrome browser display and audio threads. Worked on CPU scheduling power-saving features for the Linux kernel.

Senior Systems Engineer - Amazon, Sunnyvale

2014 - 2016

Worked on device bring up of various products including Amazon Echo, Show, Dot, Kindle etc. Fixed issues in MMC and PMIC driver stack by working closely with Hardware engineers. Worked on a mechanism to write kernel function execution traces to PSTORE (persistent store) of the Linux kernel and upstreamed them. Fixed bugs in the Linux kernel's tracing infrastructure and upstreamed them.

Texas Instruments, Dallas — Systems Engineer

2012 - 2014

Team member in the base port bring-up team in the Linux Core Product Development (LCPD) group. Performed bring up of various ARM hardware Boards including Beagleboards. Tweaked Ethernet and USB stacks to make network boot possible. Maintained the EDMA DMA Engine driver. Authored several improvements to DMA (performance and framework). Author of various cryptographic drivers for OMAP SoCs. Worked on every level of the kernel stack including machine layer, early boot code (ARM), boot loader, block layer, file systems, networking and display drivers. Optimized performance and fixed bugs with heavy use of tracing, profile and debug tools. Responsible for core Linux kernel support for TI's Davinci, OMAP and Sitara line of ARM based SoCs.

Joel Agnel Fernandes

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Full list of conference talks and publications at joelfernandes.org

SKILLS

Programming: C, C++, Python, JavaScript, Ruby, Rust, Assembly, TLA+, Lisp, Ruby, Python, Perl, Erlang, LaTeX, Verilog.

Processors: ARM Cortex-A, Cortex-M, ARM9, MSP430, x86, x86-64, 8051.

OS's: Linux, Android, Windows.

Debug Tools: GDB, KGDB, KDB, Ftrace, SystemTap, ktap, Lauterbach, OpenOCD, Eclipse, Wireshark. Other Tools Git, SVN, Vim, Emacs, cscope, Gnuplot, Matlab, ModelSim, Pandas, matplotlib.

COMMUNITY

Contributed patches to various open source projects including Linux kernel operating system.

Presented talks at various conferences including Linux Plumbers conference, Kernel Recipes, OSPM, Embedded Linux Conference in America and Europe.

Taught several classes on Linux Internals and Embedded Systems.

Atlantis Computing, Bangalore, India — Full stack development

2008 - 2010

Developed a JavaScript, Ruby-On-Rails and Erlang application for a browser-based product that allows users to interact with a virtual machine.

University of Texas, Dallas — Networking Researcher

2010 - 2012

Conducted research and experiments on different metrics to estimate the link conditions and thus improve routing. Modified drivers and mac80211 Linux Kernel code and carried out experiments. Worked on TCP/IP, UDP and other areas. Fixed bugs in wireless driver and routing code. Worked with professor Ravi Prakash on research assistance.

EDUCATION

University of Texas at Dallas, Richardson TX — Masters, Computer Engineering

August 2010 - May 2012

- Obtained Grade Point Average (GPA) of 3.97/4.0. "A" Grade in 10/11 courses.
- Awarded full tuition waiver scholarship by the department for Spring 2011.

Visvesvaraya Technological University — Bachelors of Engineering in Electronics and Communication

2003 - 2007

- First class with distinction in all semesters (1st to 8th sem), second rank in the college.
- Received Merit Scholarship during the 2nd and 3rd year (2004–2005 and 2005–2006).