Tudor **Ambarus**

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ABOUT

I am an Embedded Software Engineer and a linux kernel engineer / consultant / contractor / freelancer with 11+ years of experience. I'm using my experience and capabilities to architect, design, and implement top of the line solutions for businesses worldwide.

Linux Kernel Maintainer for the SPI NOR subsystem and drivers

Active contributor to u-boot, linux kernel, buildroot and Yocto Project

Track record of upstream and mainline contributions

Job related skills:
❇ Embedded C programming
❇ 2nd stage bootloaders
❇ Mainline U-boot
❇ Mainline Linux Kernel
❇ Specialized hardware controllers: SPI, QSPI, NAND, DMA, crypto.
❇ Flash memories – expert on SPI NORs
❇ Core architectures: ARM Cortex A5, ARM926EJ-S, ARM Cortex A7
❇ Security – symmetric/asymmetric cryptography, authentication, digital signatures, Key management
❇ Measurement equipment: logic analyzers, oscilloscopes
❇ Makefile
❇ Scripting languages (bash, python)

Interested in remote work.

WORK EXPERIENCE

01/2019 – Present (3 yrs 7 mos)

Linux Kernel Maintainer, Linux Kernel Community, Freelance

Linux kernel Maintainer for the MTD SPI NOR flash subsystem and drivers.
Re-designed the SPI NOR framework in linux kernel.
Review and provide directions for contributors around the world.
Formed a little SPI NOR team, gathered around me two valued contributors and proposed/promoted them to co-maintainer and reviewer roles.
One can check my linux kernel mainline contributions at:

https://git.kernel.org/pub/scm/linux/kernel/git/next/linux-next.git/log/?qt=author&q=ambarus

02/2017 – Present (5 yrs 6 mos)

Senior Embedded Linux Software Engineer, Microchip Technology Inc., Bucharest

Writing device drivers for Linux kernel and bootloaders for the Microchip's AT91 ARM products: https://www.linux4sam.org/bin/view/Linux4SAM

Roles:

- Developer and maintainer for the Linux MTD SPI NOR subsystem and drivers.
- Developer and maintainer for the Microchip NAND driver (Linux kernel).
- Developer and maintainer for the Microchip Quad SPI driver (Linux kernel).
- Maintainer for the Microchip SPI driver (Linux kernel).
- Co-maintainer for the Microchip AT91 DMA drivers (Linux Kernel).
- Author and maintainer for the Microchip ECC crypto driver (Linux kernel).
- Act as maintainer for the Atmel Crypto drivers (Linux kernel).

Involvements:

- Backported and adapted the Microchip Quad SPI driver, from Linux to U-Boot.
- Re-designed the SPI NOR framework in linux.
- Involvements in the SPI NOR framework in u-boot.
- Added Microchip's NAND and QSPI support from the first stage bootloader up to kernel for various SoCs (sam9x60, sama7g5).
- Manage Buildroot packages for the Microchip's linux4sam release.
- AWS IoT Greengrass and ATECC608A integration in the linux4sam release: https://aws.amazon.com/blogs/apn/adding-secure-element-support-using-aws-iot-greengrass-hardware-security-integration-hsi/
- Customer support.

Part of a team of 4 engineers that fully manage the linux4sam releases. Handle the Bootloaders (2nd stage bootloader and u-boot), kernel & rootfs (buildroot, yocto project). Gone through all the software stages: development, integration, testing, releasing the images and updating documentation.

- SoCs handled: sam9, sam9x5, sama5d2, sama5d3, sama5d4, sam9x60, sama7g5
- New board support introduced during the time: SAMA5D27 SOM1 EK, SAMA5D27 WLSOM1 EK, SAMA5D2 ICP, SAM9X60 EK, SAMA7G5 EK.
- Boards handled during the time: all from above and AT91SAM9X5-EK, SAMA5D2 PTC EK, SAMA5D2 Xplained, SAMA5D3 Xplained, SAMA5D4 Xplained.

Made proposals to improve the linux4sam release (better quality and faster release process) which were later on integrated.

Check my contributions:

- linux mainline kernel: https://git.kernel.org/pub/scm/linux/kernel/git/next/linux-next.git/log/?qt=author&q=ambarus
- linux microchip kernel https://github.com/linux4microchip/linux/commits?author=ambarus
- u-boot mainline: https://github.com/u-boot/u-boot/commits?author=ambarus
- u-boot at91: https://github.com/linux4sam/u-boot-at91/commits?author=ambarus

- at91bootstrap:https://github.com/linux4sam/at91bootstrap/commits?author=ambarus
- buildroot: https://github.com/linux4sam/buildroot-external-microchip/commits?author=ambarus
- yocto project, meta-atmel: https://github.com/linux4sam/meta-atmel/commits?author=ambarus

08/2011 – 02/2017 (5 yrs 7 mos)

Senior Embedded Linux Engineer, NXP Semiconductors, Bucharest

Developer of the public key cryptography part of linux caam driver.
Developer of the aes-gcm, aes-gmac, rfc4106, rfc4543 support in linux caam driver.
Added support for OpenSSL - TLS Record Layer offload in linux caam driver (TLSv1.0, TLSv1.1, TLSv1.2), user-space to kernel.
Added support of hash algorithms via Queue Interface in linux caam driver.
Developed asm-like descriptors for the crypto accelerator.
Customer support

EDUCATION

2012 - 2014

Master of Science, Advanced Software Technologies for Communications program, Politechnic University of Bucharest, Faculty of Electronics, Telecommunications and Information Technologies, 10/10 graduation exam

Dissertation paper "OpenSSL - TLS Record Offload" was developed under supervision from Dr. Ing. Serban Obreja (Polytechnic University of Bucharest) and Ing. Cristian Stoica (Freescale Semiconductor).

I offloaded the cryptographic operations done at TLS Record layer to Freescale's QorIQ Security hardware acceleration module. This way all the cryptographic operations were done in hardware, obtaining an improvement of 400% on packet throughput, with lowering the CPU utilization from 88% to 15%.

2008 - 2012

Bachelor of Science, Networking and Software for Communications Polytechnic University of Bucharest , Faculty of Electronics, Telecommunications and Information Technologies, 9.7/10 graduation exam

Ranked in the top 5 of ~100 students from the Networking and Software for Communications specialization

Graduation paper "GTP-U linux user space application for 3G and LTE networks" was developed under supervision from Prof. Dr. Ing. Eugen Borcoci (Polytechnic University of Bucharest) and Ing. Mircea Pop (Freescale Semiconductor).

PAPERS

2016, Eugen Borcoci, Marius Vochin, Tudor Ambarus, “Multi-criteria based Optimization of Placement for Software Defined Networking Controllers and Forwarding Nodes”, The Fifteenth International Conference on Networks, ICN 2016 (http://www.iaria.org/conferences2016/ProgramICN16.html).

2015, Eugen Borcoci, Tudor Ambarus, Marius Vochin, “On Multi-Controller Placement Optimization in Software Defined Networking –based WANs”, International Journal on Advances in Networks and Services (http://www.iariajournals.org/networks_and_services/tocv8n34.html).

COMMUNICATION SKILLS

- Fluent in English
- Beginner in French
- Presentation skills – Trainer for the Microchip Global AFG Training, Colorado Springs, Jan 2018. Presented “AWS IoT Linux Solution and ATECC508A”. https://www.microchip.com/design-centers/internet-of-things/amazon-web-services
- Inter-cultural communication skills developed by closely working with colleagues on three continents