



Internship: support for video encoding with the Allwinner SoC VPU in the Linux kernel

Bootlin

This document was taken from <https://bootlin.com/blog/2020-internships/>

Company overview

Bootlin proposes development and training services around embedded Linux and its kernel. Founded in 2004 and now employing 12 people, it has gained a strong reputation for its expertise in Linux kernel development and embedded Linux system integration. With a mostly international customer base, Bootlin works for major semiconductor vendors and multiple embedded system makers.

With strong roots in Free Software and Open Source, Bootlin releases all its training materials for free under a free documentation license, and makes a great number of contributions to the Linux kernel and to other community projects. Bootlin often appears in the top 20 worldwide list of companies contributing to the mainline Linux kernel.

Bootlin also invests a lot in the involvement of its engineers in the technical community, which gives them visibility and a good reputation beyond the limits of the company employing them, which is quite rarely offered by other companies throughout the world.

Internship topic

Allwinner is a Chinese company designing and producing low-cost ARM system-on-chips, which have become very popular in many embedded applications. In 2012, Maxime Ripard, then engineer at Bootlin, started supporting such processors in the mainline Linux kernel, and since then, such support hasn't stopped improving in projects like Linux and U-Boot.

In 2018, Bootlin launched a successful crowdfunding campaign¹ which allowed to develop a driver for the hardware video decoding unit present in these Allwinner processors. This driver is now included in the mainline Linux kernel.

1. <https://bootlin.com/blog/tag/vpu/>



Bootlin wishes to continue the development of this driver by adding support for H.264 video codec encoding, and by submitting these changes to the mainline Linux kernel.

Other developments can be planned if this goal is reached before the end of the internship, in particular improving the quality of support for existing codecs for decoding or adding support for further codecs.

Such an internship will make you familiar with Linux kernel development and will allow to contribute to it by sending your own patches, in the context of a non-trivial driver. You will also get substantial experience in video codecs and will have an opportunity to work on low-level code in direct connection to the hardware.

Internship supervision

The internship will be supervised by Paul Kocalkowski, co-developer of the Allwinner VPU driver.

The intern will work in a team of Linux kernel and embedded Linux engineers, with a very strong level of expertise.

Useful skills

- Good command of the C language
- Understanding the hardware architecture of a processor
- Basic understanding of Linux kernel development, or at least of low-level development.
- Basic understanding of Git.
- Understanding of the way Open-Source communities organize, and ability to communicate with its members (IRC, e-mail, etc.)

Practical information

- Who can apply: all students from the European Union, studying in a European University
- Location:
 - Colomiers, in the Toulouse metropolitan area, France, reachable by train.
- Dates: between February and September 2020
- Gross monthly compensation: between 500 and 1000 EUR, according to profile (end of studies or half-way, experience, etc.)
- Duration: at least 4 months
- How to apply: send your resume and interests to jobs@bootlin.com