

19/01 - FPGA/Digital Electronics Team Placement

Thales Alenia Space in the UK Ltd

Please note:

Applicants must have the legal authorisation to reside and work in the UK in order to be considered for this placement

Priority consideration will be given to applicants that are towards the final stages of academic study or have recently completed their study.

Location

Building 660, Bristol Business Park, Bristol BS16 1EJ

Company Description

Thales Alenia Space (TAS) has more than 40 years' experience in designing, integration, testing, operation and commissioning of innovative space systems. Using some of the world's most sophisticated technologies, we meet the needs of a variety of commercial, government, scientific and security customers. Our teams create the technology to monitor our oceans, help us better understand climate change and drive scientific progress. We also have developed key parts for the International Space Station and play a pivotal role in exploring the universe.

Thales Alenia Space in the UK (TASitUK), started in 2014, has over 160 employees between three sites in Bristol, Harwell and Belfast. In the TASitUK specialises in early stage technology development, satellite propulsion, radiation hardened electronics, small satellite design and assembly.

Project Description

TASitUK's FPGA and Digital Electronics Engineering Team carries out work in both flight design and early concept development. This allows the team to work with cutting edge technologies such as Xilinx Zynq MPSoC Ultrascale+ FPGAs to be sure that future Space grade FPGAs can be fully exploited in upcoming missions.

In 2018, the team will begin working on a number of EU Horizon 2020 research programmes. A large part of these programmes aims to push the hardware acceleration capabilities of Machine Vision in space. As part of the prototyping activities, the Xilinx reVISION stack and a COTS stereo camera (Zed Camera) will be used to evaluate hardware acceleration opportunities for different robotics guidance and navigation use cases. Previous work focused on building a development platform for such algorithms, which will be further extended in 2018. This opens up much opportunity to learn about the Ultrascale+ architecture, reVISION stack and acceleration of vision algorithms.

Opportunities in this placement are likely to include:

- Learning about the Xilinx Zynq MPSoC Ultrascale+ architecture.
- Gaining knowledge of FPGA design/using FPGAs to architect solutions.
- Understanding and evaluating performance metrics.
- Learning about computer vision algorithms.
- Using reVISION to accelerate common computer vision algorithms.
- Interfacing with and using a stereo camera.

The length of the placement is 12 months.

Student Specification:

The student should have a keen interest in machine vision, hardware acceleration and FPGA development. Experience of at least one of these is desirable as it will allow the student to better benefit from the placement. Other key skills include:

- Ability to read and digest technical documentation. The Ultrascale+ and reVISION ecosystem require substantial understanding.
- Ability to understand complex device architecture, identifying hardware features to be exploited and any limitations that they impose.
- Knowledge of a programming language (C/C++ ideally). Exposure to OpenCL or similar will be beneficial.
- Understanding of benchmarking/performance metrics and ability to analyse and select optimal configurations.
- Knowledge of or exposure to image processing/machine vision will be beneficial.
- Experience with Xilinx tools will be beneficial.
- Ability to write structured reports detailing methods, findings and conclusions.
- Comfortable at both working alone and working in small teams.

The work will be aiming to enhance the knowledge and capability of the FPGA Team for future mission requirements. Therefore, the most important requirement is a desire, willingness and capacity to learn.

Suggested courses include Electronic Engineering, Robotics, Physics, Computer Science.

Closing Date for Applications: Thursday 14th February 2019

Applications will be through the online form attaching a CV, before the closing date. They will be forwarded to the employer.