

Training title: High performance computing for image processing**Field: Operations and R&D****Speciality: Software development**

Subject

Modern image processing algorithms shall use a broad range of software and hardware resources to be compliant with execution time requirements as they become more complex and are applied on an increasing number of images. Available resources for algorithms are for example: low-level CPU features (SSE/AVX extensions, multi-threading), GPU parallel computations, or highly distributed processing using Big Data and Cloud Computing (GCE, OpenStack) technologies.

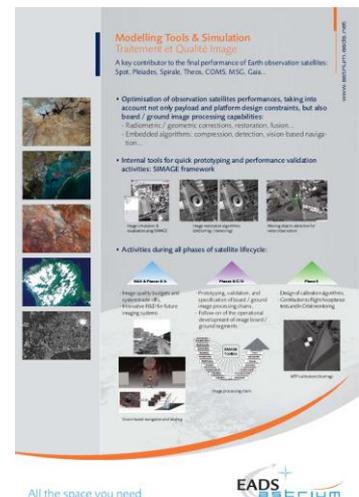
After you gather requirements from the image processing technical leaders and study the existing algorithm architecture, you will fulfil a prospective study to find new technical solutions to improve the execution times of image processing algorithms in a Cloud Computing context.

A comparison of all technical solutions shall be eventually produced with a set of prototypes providing more information about the execution time improvement of one/multiple algorithms.

Company background

The Space System business line of Airbus Defence & Space is the European leader in the field of optical Earth Observation systems. The company, through its history, is a pioneer of space industry, responsible for the development of the first Earth Observation space systems in Europe, starting with the SPOT family. Since this time, the company has led the major European developments in the fields, through programs such as METOP, ERS, ENVISAT, HELIOS, PLEIADES or SPOT6. This experience developed is now applied on export turn-key programs such as FORMOSAT, THEOS, ALSAT, CHILI, KazEOSat-1 or PeruSat, involving up to sub metric resolution systems, or such as COMS, a geostationary meteorological satellite for Korea.

This evolution conveyed Airbus Defence & Space to develop a strong expertise in Image Quality, Image Processing and Image Simulation through a group of about 80 engineers in 2017, constituting the Image Chain department (TESUI). The Image team carries out activities in fundamental image domains such as image simulation, ground processing, image quality, in-orbit testing, embedded processing, vision-based navigation and dedicated R&D activities.



Required knowledge

- Linux operating systems (intermediate/advanced)
 - C++ programming (intermediate/advanced)
 - Independent
 - Search skill
 - Interested in image processing, GPU computations, low-level programming (CPU extensions)
 - Cloud computing
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Desired education

- Engineering school or Master in software development
- Engineering school or Master, with specialisation in signal and image processing, or applied mathematics.

Training period length: **5 to 6 months in 2019**

Location	Airbus Defence & Space – Space Systems 31 rue des cosmonautes 31402 Toulouse Cedex 4, France
Unit	TESUI – Sensor Processing Chain department
Deadline	15/12/2018
Contact	stages-image-airbus@airbus.com
