

Training title: *Satellite image quality*

Field: Operations and R&D

Speciality: Image performance assessment on star acquisitions

Subject

Image quality is a key driver in the acquisition chain for observation and planetary exploration missions. However, image quality assessment is not straightforward and often requires specific data acquisitions.

The Modulation Transfer Function (MTF) is a quality measure characterizing the blur within the image. It is generally assessed on specific ground patterns. This method has many drawbacks: the quality of the pattern itself, the cloud coverage, etc.

The training period will consist in designing, developing and testing an algorithm to assess the MTF performance using images of stars. This method does not have the main problems of standard Earth acquisitions.

The training period will be composed of several activities:

- Bibliography study
- Mathematical modelling
- Star acquisition simulation
- Prototyping the algorithm
- Testing and validation of the algorithm

Depending on the planning of the internship, the tasks may be adapted to be as interesting as possible to the candidate.

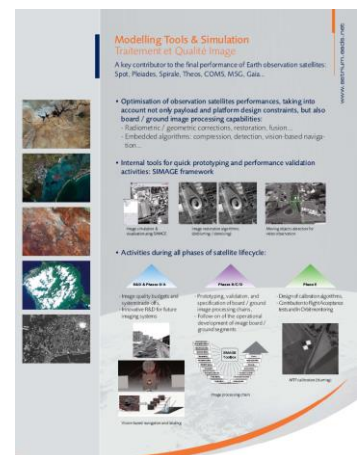
The trainee should have both a solid image processing background and computer programming skills (Matlab and/or Python and/or C/C++).



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, deep learning and dedicated R&D activities.



TRAINING PERIOD 2020

Image processing for space applications

Required knowledge

- Generic knowledge of image processing and numerical analysis
- Python / Matlab; Windows & Linux OS

Desired education

- Engineering or Master's student, 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
