REF: 10337775

Training title: *Image processing advanced studies*
Field: Operations and R&D
Speciality: Image processing

Subject

Vision-based navigation is an enabler for many space applications like in orbit servicing, landing on asteroids, debris removal. However the processing required for such needs shall deal with the very limited resources of the spacecraft: algorithms have to be heavily optimized in that perspective. Besides, the need for precision remains important.

One lead to increase processing efficiency or to reach new performance levels is to rely on **machine learning**; the tremendous evolution in this domain (e.g. deep learning) opens new possibilities.

The training period will consist in applying some machine learning technics to vision-based algorithms developed in the department, within the Image Chain department of the Space System business line of Airbus Defence & Space.

The subject will be more precisely detailed during the interview, depending on the different studies of the image department and on the aspirations of the candidate. Depending on the planning of the internship, the contents may be adapted to be as interesting and suitable as possible.

The trainee shall have both solid image processing and machine learning backgrounds, as well as demonstrating sound computer programming skills (C/C++ or Python).

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 is 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, SPOT6/7 or GAIA. This experience developed is now applied on export turn-key programs such as FORMOSAT, THEOS, ALSAT, CHILI or KazEOSat-1, 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 50 engineers in 2016, constituting the Image Chain department (TSOTU2). 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

- Generic knowledge in image processing as well as numerical analysis,
- Generic knowledge or first experience with machine learning
- C/C++, Python; Windows & Linux OS

TRAINING PERIOD 2017
Image processing for space applications

Desired education
- Engineering school or Master, with specialisation in signal and image processing, machine learning or applied mathematics.

Training period length: **5 to 9 months in 2017**
+ Possibility of a one year internship.

Location	Airbus Defence & Space – Space Systems
	31 rue des cosmonautes 31402 **Toulouse** Cedex 4, **France**
Unit	TSOTU2 – Image Chain department
Deadline	16/12/2016
Contact	David Villa Pascual: David.VILLAPASCUAL@airbus.com