Training Opportunity for "Young Graduate Trainees"

Reference	Specialist Area	Duty Station	Closing Date
ESA/YG-ESTEC(2012)024	**Physics/Astrophysics**	**ESTEC**	**16 December 2012**

Overview of the Division's mission

Gaia is the state-of-the-art astrometry mission of the European Space Agency (ESA), due for launch in the second half of 2013. During its five-year lifetime, Gaia will survey the entire sky with 106 CCD cameras and will repeatedly observe the brightest 1,000 million stars. Gaia's science data will comprise astrometry (stellar positions, proper motions, and parallaxes = distances) at the micro-arcsecond level as well as photometry at the milli-magnitude level. In addition, spectroscopic data will be obtained for the brightest 150 million sources in the sky, allowing retrieval of radial velocities. Gaia's primary science goal is to unravel the three-dimensional kinematical, dynamical, and chemical structure and evolution of our home Galaxy, the Milky Way. In addition, Gaia's data will touch many other areas of research, for instance stellar physics, solar-system bodies, fundamental physics, and exo-planets. Details can be found at http://gaia.esa.int/ and a Gaia vodcast is available from http://sci.esa.int/science-e/www/object/index.cfm?fobjectid=45772.

The Gaia spacecraft has entered the Integration and Test phase, under responsibility of the industrial partner, EADS Astrium SAS in France. The processing of the science data is currently being prepared by more than 400 scientists across Europe organised in the Data Processing and Analysis Consortium (DPAC). Spacecraft operations are being prepared at the ESA Mission and Science Operations Centres (MOC and SOC) in Germany and Spain. The orchestration of all these activities is conducted from the European Space research and TEchnology Centre (ESTEC) in The Netherlands by the Gaia Project Team. Also located at ESTEC, and liaising with all parties mentioned above involved in the mission, is the Gaia Project Scientist Support Team, responsible for the scientific performance of the Gaia mission (http://www.rssd.esa.int/gaia).

Overview of the field of activity proposed

The Gaia Project Scientist Support Team offers a traineeship in the area of "Gaia's on-board object detection".

The on-board object detection is autonomous and real-time, based on novel and dedicated software developed by industry called the Video Processing Algorithms (VPAs). An exact copy of the VPAs has been integrated into the DPAC-developed Gaia Instrument and Basic Image Simulator (GIBIS) allowing, for the first time, to realistically simulate and predict the response of Gaia to the complexities and diversity of the sky. The now-available machinery opens up a wide range of possibilities for interesting studies. Various parameters in the VPAs can be tuned to influence the object-detection characteristics of various types of objects, for instance single stars (in crowded fields), double stars, external galaxies, asteroids, etc. Their study is hence important for optimising the science return of the mission.

The trainee will investigate the sensitivity of the on-board object detection to various parameters, aiming to be optimally prepared for the commissioning of the spacecraft.

Educational and other requirements

Applicants should have just completed, or be in their final year of a University course at Masters Level (or equivalent) in a technical or scientific discipline. Programming experience, for instance in Java or Matlab, is an asset.

Applicants should have good interpersonal and communication skills and should be able to work in a multi-cultural environment, both independently and as part of a team.

Applicants must be fluent in English and/or French, the working languages of the Agency. A good proficiency in English is required.

How can I apply?

Please fill in the online application form.
Please note that only one application may be submitted for the YGT Scheme.

The YGT Scheme is open to recently qualified young men and women
who are nationals of one of the following states:
Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Romania, Spain, Sweden, Switzerland, and the UK, or Canada as a Cooperating State, Estonia, Hungary, Poland and Slovenia as European Cooperating States (ECS).