

Training Opportunity for “Young Graduate Trainees”

Reference	Specialist Area	Duty Station	Closing Date
ESA/YG-ESTEC(2013)025	Advanced Concepts in Biomechanics	ESTEC	15 December 2013

Overview of the Division's mission

Within the European Space Agency, the Advanced Concepts Team (ACT) is engaging in collaborative research relations with university institutes and research centres, focusing on advanced research topics of potential strategic interest to the space sector and in experimenting with new forms of teamwork. In order to achieve this goal a multidisciplinary research environment is provided, in which young scientific and engineering post-doctoral and post-graduate researchers carry out work on emerging technologies and innovative concepts. Candidates are strongly encouraged to visit the website of the team to obtain more information about the team in preparation of their application and interview: <http://www.esa.int/gsp/ACT/index.html>.

Overview of the field of activity proposed

The candidate will be researching the transfer of biological concepts into mechanistic frames to provide a link between concept and realisation. In close cooperation with the biologist of the team, the successful candidate will apply his expertise in mechanistic modelling to transpose solutions found by nature into mechanical concepts potentially useable in space systems. The candidate will be specifically working on one to three concrete projects in this field, chosen jointly based on the interest and expertise of the candidate. Applicants are invited to carefully review past biomimetic projects of the team to understand the scope of the team's activities in this field. Projects can range from modelling eyes of jumping spiders as a biomimetic distance sensor, to the assembly and construction of very large scale space structures inspired by spider webs, to tactile-based grasping of tendrils, seed dispersal techniques up to massive swarm systems.

Tasks during this position will mainly involve:

- Modelling of biological systems and concepts;
- Testing of hypothesis through the accomplished model systems;
- Analysing limitations and options of transferring biomimetic solutions to mechanic systems;
- Linking different disciplines through the accomplished model.

Depending on the nature of the project, this might also involve interfacing with the academic community in these fields. The successful candidate will be a member of the Advanced Concepts Team (<http://www.esa.int/gsp/ACT/index.html>) and therefore expected to contribute to the development and the assessment of new concepts and technologies for space applications in close interaction with ACT researchers who work on a broad range of disciplines including, informatics, artificial intelligence, climate modelling, energy systems, fundamental physics, biomimetics, computational management science and mission analysis. Based on her/his detailed background and interests and the opportunities and needs of the team, the successful candidate will be involved in a number of other ACT initiatives (including studies conducted via the Ariadna scheme, <http://www.esa.int/gsp/ACT/ariadna/index.html>) and participate in reporting and communicating results of the team (internally and externally).

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, with a strong focus on modelling in disciplines like biomechanics, bionics, biomechanics, engineer, electro-mechanics. Applicants should have a sound background in modelling and strong interest in biological systems. Moreover, good programming and modelling experiences (e.g. C, C++, Python, Matlab) are valuable assets.

Applicants should show a genuine interest in applied academic research, together with sound analytical skills, avid curiosity and a natural aptitude to self-motivation and teamwork. 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, Poland, Portugal, Romania, Spain, Sweden, Switzerland, and the UK,
or Canada as a Cooperating State, Estonia, Hungary, Latvia and Slovenia as European Cooperating States
(ECS).