From: Antonella Costa <Antonella.Costa@scisys.de>

Mi occupo di Ricerca e Selezione del Personale per conto di SCISYS Deutschland (www.scisys.de) e al momento
abbiamo un'opportunità per svolgere una tesi di laurea qui da noi in azienda.
In allegato tutti i dettagli.

Scadenza 18 giugno 2017

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Master Thesis

Optimal Control Strategies for Simultaneous Station Keeping and Momentum Management of Geostationary Satellites Using Electric Propulsion

About us

SCISYS provides professional engineering and consultancy services supporting space programmes and missions. We have a strong presence at ESOC and EUMETSAT, as well as serving all ESA sites and spacecraft primes. Our team is composed of university graduates and experienced professionals, comprising some of the most knowledgeable, dedicated and talented engineers across Europe. Our services cover the whole life cycle of space programmes from early concepts to operations.

Our Space Division provides a dynamic, supportive and friendly atmosphere in which you are encouraged to lead with initiative. We support new ideas from our colleagues and are focused on innovation. Moreover, we actively manage your professional development, training and career progression.

We are currently looking for the right candidate to complete their **Master's Thesis** with us. You will be based in our office in Darmstadt, with an expected start date of July 2017 for 6 months.

Tasks

The geostationary ring is a highly disputed space region, pushing orbital control for geostationary spacecraft to very demanding conditions. Modern spacecraft are evolving towards fully electrical propulsion, benefiting from their higher efficiency.

The main goal of this thesis is to develop optimal control strategies in order to keep a geostationary spacecraft within its allocated control box, by using electric propulsion only. The current state-of-the-art solutions to the problem, focusing on the underlying spacecraft dynamics and control, need to be fully understood first, before the control problem is to be formulated as an optimization task. The formulation of the problem shall consider:

- Optimization of the fuel consumption
- Path constraints (keeping the spacecraft inside the control box)
- Technological constraints (mission-specific electric power system)

In a second phase, the formulation shall consider augmenting the spacecraft state by adding the reaction wheel levels' states, in order to provide simultaneous momentum management and orbit control, given a planned attitude profile from ground. Finally the interface to a selected optimization solver shall be build and the optimization module be provided as a software library.

Essential Requirements

- Extensive and in-depth knowledge in control engineering with focus on optimal control methods, both linear and non-linear
- Numerical analysis knowledge
- Fluent English

Desirable Requirements

- Flight Dynamics knowledge
- Software programming skills (Java)

To apply, please send us your CV and cover letter to recruiting@scisys.de for the attention of Kiri Wood and/or Antonella Costa by no later than **18th June 2017.**

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