The Delft Center for Systems and Control at TU Delft - Delft University of Technology, The Netherlands, has an opening for a post doctoral position on the topic "Optimal Control and Game Theoretical Methods in Systems Biology".

General Project Description

Systems Biology is an interdisciplinary field that pursues data-driven, model-based studies of biological organisms and functions. The use of quantitative models is intended to be tightly coupled with biological experiments. Within this project, we pursue the development of quantitative models within a conceptual framework to study and understand competition and cooperation among organisms interacting within a resource-constrained environment.

The theory of dynamical (evolutionary) games provides the basis for understanding the interaction and the dynamics between populations of such organisms. The solution of these games over sets of possible strategies is related to specific optimality conditions for the populations under study. The project will investigate the construction of new, ad-hoc optimality conditions over certain game-theoretical problems. The use of new metrics for optimality will allow to establish a framework to understand survival properties, competitive strategies, as well as cooperative behaviors among interacting populations of organisms.

The project intends to leverage interactions with colleagues in biology in order to provide specific expertise and experimental counterpart to the theoretical results to be developed within this research.

Candidate Profile

We are looking for a candidate with a PhD degree in a topic related to systems biology or broadly connected to the themes of the described research, such as applied mathematics, theoretical biology, bioinformatics, or systems and control. The candidate will be involved in fundamental research with expected collaborations alongside biologists. It is preferable that the candidate has expertise and skills in simulation software (Matlab, Mathematica, gPROMS). Required are good communication skills in writing as well as oral English (knowledge of Dutch is not required).

Conditions of Employment

We offer the opportunity to do fundamental research on scientifically challenging topics. The candidate will work in collaboration with other researchers and students in an international, multi-disciplinary research group at DCSC, the Delft Center for Systems and Control. DCSC is part of the Faculty of 3mE at TU Delft - Delft University of Technology. DCSC coordinates the education and research activities in Systems and Control at TU Delft. The researcher will also involved in the network of the national research school DISC (The Dutch Institute of Systems and Control). The appointment will be for one year, with a possible extension. As an employee of the university the researcher will receive a competitive salary as well as excellent secondary benefits in accordance with the Collective Agreement (CAO) of the Association of Universities in the Netherlands VSNU. Assistance with accommodation can be arranged.
Further Information and Application Process

If you are interested in this position, please send, along with a brief cover letter,

1. a detailed curriculum vitae,

2. a copy of your PhD dissertation, plus any additional information on earlier degrees,

3. a publication list, copies of the two most relevant articles, links to developed software,

4. names and addresses of (at least) two reference persons,

5. and all other information that might be relevant to support your application


to Dr. Alessandro Abate (email: a.abate@tudelft.nl).

More information on this position can be obtained from Dr. Alessandro Abate at http://www.dcsc.tudelft.nl/~aabate

The position will remain open until filled, however evaluations and possible interviews of candidates will start as early as Summer 2010.