Open PhD/Master thesis positions in Toulouse, France

Stochastic Modeling of Computing Systems

Funded by the French National Agency of Research through the project ANR RACON, there are opportunities to carry out the Master and PhD theses at IRIT-ENSEEIHT and LAAS, Toulouse.

Title: Efficient resource allocation in congested networks

Description of project: Congestion is a ubiquitous phenomenon arising in many real life situations like transportation or communication networks. Congestion appears when the offered load to the system approaches or exceeds its capacity, having a very bad impact from performance and economic point of view. It is therefore in this setting of crucial importance to efficiently allocate the resources in order to minimize the performance degradation. In most cases of practical interest, the complexity of the models under consideration makes exact analysis out of reach. Our plan of attack is to investigate approximate techniques that will lead to obtain insights into the optimal resource allocation. The accuracy of the obtained resource allocation schemes will then be established by obtaining performance bounds or by proving its optimality for some particular instance of the problem. The final goal is to obtain a unifying theory that can satisfactorily address the allocation problems in modern systems.

Key words: stochastic modeling, dynamic optimization, queueing theory, scheduling.

Research supervisors: For further information, please contact the principal researcher of the project: Urtzi AYESTA, CNRS, Toulouse, urtzi.ayesta@irit.fr, `http://www.irit.fr/~Urtzi.Ayesta`. The RACON research team is also formed by Balakrishna J. PRABHU, `http://homepages.laas.fr/bala/`, and Maaike VERLOOP, `http://verloop.perso.enseeiht.fr/`

Host institution: IRIT and LAAS are CNRS research units. Located at Toulouse, they are associated with the 5 founding members of the University of Toulouse. The research activities fall within the domain of Information Sciences and Technologies and develop theories, methodologies and tools in order to design and control complex heterogeneous systems.

Requirements: Candidates should have a background in (applied) mathematics, operations research, computer science or electrical engineering. Experience in stochastic modeling, stochastic optimization, queueing theory or game theory will be appreciated. In the course of the project the candidate is expected to perform some numerical experiments (Matlab, C++, ...) Candidates are expected to be fluent in English, both oral and in writing.

Starting date: For the PhD position any date before October 2017 (flexible). For the Master thesis anytime before summer 2017.

Terms of employment. The salaries and terms at CNRS are in accordance with French state regulations, with full salary being given during illness and paid holidays. The PhD contract is for three years, and the candidate is expected to defend the thesis within this period.

For the Master thesis, a monthly allowance will be provided according to the rules set by CNRS.

Application: Please send a detailed curriculum vitae, along with a brief cover letter motivating your interest, through the links: Link to apply for PhD, and Link to apply for a Master thesis.