



European Research Council
Established by the European Commission

Early-Stage-Researcher/PhD positions Distributed optimization in cyber-physical networks



Early-stage researcher/ PhD positions will be available within the ERC Starting Grant project OPT4SMART. Research will be conducted at the Università del Salento (Lecce, Italy), under the supervision of Prof. Giuseppe Notarstefano.

About the position

We are looking for motivated, talented graduate students from all over the world, who wish to:

- undertake research at the cutting edge of optimization and control in cyber-physical networks;
- contribute to the startup of an excellent, international new research group;
- study in one of the most beautiful Italian cities with a great quality of life.

The initial appointment will be for one year with the possibility to join the (3 year) PhD program according to the application procedure at Università del Salento.

About OPT4SMART (Distributed optimization methods for smart cyber-physical networks)

OPT4SMART is a 5 years research project funded under the EU Horizon 2020 excellence program *ERC Starting Grant*, supporting investigator-driven frontier research on the basis of scientific excellence, erc.europa.eu.

OPT4SMART will investigate a novel distributed, large-scale optimization framework and its application to big-data estimation, learning, decision and control problems in cyber-physical networks.

Billions of smart communicating devices with their sensing, computing and control capabilities promise to make our cities, transportation systems, factories and living environments more intelligent, energy-efficient, safe and secure. This extremely complex system is giving rise to a novel peer-to-peer distributed computational model in which a service is built-up cooperatively by peers, rather than by a unique provider that knows and owns all data. The interdisciplinary Optimization Community is facing this revolution sharing a common need: to find new theories, methodologies and tools to optimize over this complex network system. With this in mind, OPT4SMART has a twofold objective. First, to provide a comprehensive theoretical framework to solve distributed optimization problems over peer-to-peer networks. Second, to develop effective numerical tools, based on this framework, to solve estimation, learning, decision and control problems in cyber-physical networks. This twofold objective will be pursued by means of interdisciplinary methodologies arising from a synergic combination of optimization, controls, and graph theories.

About Lecce

Lecce is a beautiful Baroque city in the South-East of Italy. It is a lively, graceful but relaxed university town in the Salento peninsula, the heel of Italy's boot. For a 36-hours tour of Lecce you can google [The New York Times: "36 hours in Lecce, Italy"](#).

Who should apply

The desired candidate holds a Master degree (or equivalent) in Engineering (preferably ECE, ME, AE), Applied Mathematics or related fields, and has

- an **excellent** academic record showing excellent analytical skills;
- a strong mathematical background including optimization and preferably systems and control theory;
- strong interest in optimization and at least one of: control theory, estimation, machine learning;
- proficiency in oral and written English.

The above skills and background should clearly appear from the candidate academic record and CV.

Contact

For further information about the positions and the official calls send an email with subject "OPT4SMART PhD-student *last-name*" to giuseppe.notarstefano@unisalento.it.