2018-00237 - Internship in Optimization

Contract type: Internship agreement
Level of qualifications required: A levels + 2 years of higher education or equivalent
Function: Internship Research

About Inria

Inria, the French National Institute for computer science and applied mathematics, promotes “scientific excellence for technology transfer and society”. Graduates from the world's top universities, Inria's 2,700 employees rise to the challenges of digital sciences. With its open, agile model, Inria is able to explore original approaches with its partners in industry and academia and provide an efficient response to the multidisciplinary and application challenges of the digital transformation. Inria is the source of many innovations that add value and create jobs.

About the research centre or Inria department

Located at the heart of the main national research and higher education cluster, member of the Université Paris Saclay, a major actor in the French Investments for the Future Programme (Idex, LabEx, IRT, EquipeX) and partner of the main establishments present on the plateau, the centre is particularly active in three major areas: data and knowledge; safety, security and reliability; modelling, simulation and optimisation (with priority given to energy).

The 450 researchers and engineers from Inria and its partners who work in the research centre's 31 teams, the 100 research support staff members, the high-level equipment at their disposal (image walls, high-performance computing clusters, sensor networks), and the privileged relationships with prestigious industrial partners, all make Inria Saclay Île-de-France a key research centre in the local landscape and one that is oriented towards Europe and the world.

Assignment

Assignments:
With the help of his supervisor, Dimo Brockhoff, the recruited person will be taken to investigate automatically the huge amount of data provided in the COCO platform (github.com/numbbo/coco) in search for patterns of optimization algorithm performance, a human cannot find in reasonable time. This additional value will benefit both researchers in optimization and engineers in industry that use these algorithms. A prototype web page that allows a user to investigate the existing data of the COCO platform is expected at the end of the project.

For a better knowledge of the proposed research subject:
More details about the project can be found in the project description here: http://randopt.gforge.inria.fr/thesisprojects/doku.php?id=dataminingcoco

Collaboration:
No concrete collaboration outside the Randopt team is foreseen, but the international COCO development team will be happy to interact with the person recruited.

Responsibilities:
The person recruited is responsible for his research on automatically detecting interesting patterns in the data of the COCO platform and will take initiatives for finding new ways to automatically extract and visualize them.

Steering/Management:
The person recruited will not be in charge of any steering/management.

Main activities

Main activities (5 maximum):
- research and development in the context of optimization, benchmarking and the COCO platform
- understand the rationale behind the COCO platform and its algorithm data sets
- write concrete code for automatically detecting data patterns in COCO and document it

Additional activities (3 maximum):
- actively take part in the research environment of the Randopt team (group meetings, etc.)
- actively take part in the development of the open source COCO platform

Skills

Technical skills and level required: understanding of the basics of optimization algorithms and the
benchmarking of them
Languages: python and English
Relational skills: a healthy combination of team player and independent worker
Other valued appreciated: background in machine learning

Benefits package
- Subsidised catering service
- Partially-reimbursed public transport
- Social security
- Paid leave
- Flexible working hours
- Sports facilities