



INTERNSHIP PROGRAM FOR INTERNATIONAL STUDENTS

INTERNSHIP SUBJECT FORM

Name of the Host Laboratory	Laboratoire d'Informatique de l'École Polytechnique (LIX)
Website of the Host Laboratory	https://www.lix.polytechnique.fr/
Research Group	Algorithms and Complexity
Internship Supervisor	Benjamin Doerr
Internship Subject	Runtime Analysis of Randomized Search Heuristics
Student's level	<input type="checkbox"/> Advanced Undergraduate Students (3 rd or 4 th year) <input checked="" type="checkbox"/> Master's students (1 st or 2 nd year) <input type="checkbox"/> PhD students
Proposed Duration	<input checked="" type="checkbox"/> 3 months <input checked="" type="checkbox"/> 4 months <input checked="" type="checkbox"/> 5 months <input checked="" type="checkbox"/> 6 months
Prerequisites	Experience in the design and analysis of algorithms, ideally randomized algorithms, but classic algorithms is fine as well. Excellent maths skills. Excellent English.
Internship description (max. 15 lines)	The analysis of randomized search heuristics such as genetic algorithms, ant colony optimizers, or estimation-of-distribution algorithms has greatly increased our understanding of these methods. In this research-oriented internship addressed to PhD students with a strong theoretical/mathematical background, we will work on a particular problem of current interest in this domain. The precise topic will be discussed with the intern. Topics we have been successfully conducted research in include analyses how randomized search heuristics cope with local optima, how self-adjusting parameter choices can improve the performance of genetic algorithms, and how estimation-of-distribution algorithms can avoid being trapped by genetic drift. The target for this internship is to lay the foundations for a scientific paper to be submitted to an international conference.

The boxes marked with cross implies eligible