Département de gestion
des opérations et de la logistique

HEC MONTRÉAL

OPERATIONS RESEARCH & COMPUTER SCIENCE INTERNSHIP

Keywords: vehicle routing, technician routing, logistics, large-scale optimization

PROJECT MOTIVATION & GOALS: French electricity giant EDF plans thousands of technician service requests every day. Some of these requests (type A) require coordination with customers who must be home during the service, while others (type B) do not. A considerable part of this operation is carried out by third party contractors to which EDF provides a detailed routing and scheduling plan. Building these plans requires solving a large-scale multi-modal vehicle routing problem with particular features. Indeed, the routes can start and end at any customer and can include segments that combine driving and walking (in a park-and-loop fashion). The objective is to minimize the total cost, which is based on the number of technicians, the driving distance, and the walking time. The plans, usually built days in advance, must often be re-optimized prior to their execution to account for any cancelled type-A requests and to accommodate as many new type-B requests as possible, without modifying the times already committed to with customers of type-A requests.

The goal of the project is to conceive, implement, and test optimization algorithms to solve both the planning and the re-optimization problems. Under the guidance of university faculty and with the support of scientists at EDF, the intern will contribute his or her ideas to ongoing research, will assist with the implementation of computer code to examine various solution approaches, and will participate in the write-up and submission of results to an academic journal in the field of transportation and logistics.

CONTEXT: The intern will be based at the Interuniversity Research Center on Enterprise Networks, Logistics, and Transportation (CIRRELT) in the city of Montréal (Canada). The internship will be supervised by Professors Jean-François Cordeau and Jorge E. Mendoza from the Department of Logistics and Operations Managements at HEC Montréal. The intern will receive a scholarship of CAD $1000 per month.

The duration of the internship is 5 to 6 months, depending on the intern's availability. Although the start date is flexible, beginning in February 2019 is preferable. A successful internship may lead to scholarship funds for future doctoral study.

DESIRED QUALIFICATIONS: The ideal applicant possesses strong computer programming skills (preferably in Java); is familiar with operations research models and methods including math programming, decomposition techniques (e.g., Benders), meta and matheuristics; and is able to communicate comfortably in English. Such applicants may be master's students in operations research, management science, industrial engineering, or applied mathematics programs. Please note that knowledge of French is only necessary for making life more pleasant in Québec but not professionally required.

CONTACT: Interested applicants should email Pr. Jean-François Cordeau (jean-francois.cordeau@hec.ca) and Pr. Jorge E. Mendoza (jorge.mendoza@hec.ca) with the following attachments: an up-to-date CV, a letter of motivation, transcripts for the last two academic years, and the name and contact information of 2 professional references. Please use "[EDF] Internship application" for the subject of the email. The deadline for applications is December 1, 2018.

3000, chemin de la Côte-Sainte-Catherine, Montréal (Québec) Canada H3T 2A7
Téléphone : 514 340-6716 Télécopie : 514 340-6834
www.hec.ca/gol www.hec.ca/chaine

École affiliée à
l'Université de Montréal