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# Multicriteria trip planning

**Supervisor:** Vassilissa Lehoux <vassilissa.lehoux@xrce.xerox.com>

**Duration:** 5-6 months

## Description

When travelling through a city, many criteria can influence the choice of a path among the large number of possibilities that are offered. If considering only arrival time, an optimal path can be computed in a very efficient way [Bast et al. 2014]. However, when adding other criteria, the problems becomes much more complex and obtaining the set of optimal solutions more challenging.

The aim of this internship is to propose, for some specific NP-hard versions of the problem, models and algorithms efficient in practice.

## Requirements

As part of the 2nd year of your Master Degree, or final year of your Engineering School, you are looking for an internship lasting 5 or 6 months. Ideally, your diploma has a major in computer science and/or applied mathematics with some courses on operational research topics.

As prototypes are to be implemented, working knowledge of C++ is a plus and the candidate must be autonomous and motivated by optimization, innovation and research.

## Citations

· [Bast et al. 2014] Hannah Bast, Daniel Delling, Andrew V. Goldberg, Mathias Muller-Hannemann, Thomas Pajor, Peter Sanders, Dorothea Wagner, and Renato F. Werneck. Route planning in transportation networks. Technical Report MSR-TR-2014-4, Microsoft Research, January 2014.