

PhD vacancy at Eindhoven University of Technology
Dissertation topic: Dynamic traffic control through in-car navigation systems

The Section Stochastics of the Department of Mathematics and Computer Science at Eindhoven University of Technology invites applications for a PhD position in the area of Applied Probability and Operations Research.

The PhD project is part of the *Dynafloat* program, funded by NWO/Topsector Logistics. Dynafloat involves three PhD projects, in a collaboration between UvA/CWI, UT and TU Eindhoven.

Brief description of the PhD project:

The growing urbanization concentrated in large cities poses enormous challenges to our society. The efficient use of available infrastructure and sound mobility and logistics planning and control frameworks are among the main challenges. This project focuses on the use of massively available planning and floating car data in addition to data from roadside equipment, to enable dynamic control of both freight and passenger flows. We exploit the data to provide users with suggestions for alternative routes that they can use to reach their destinations, in order to improve the performance of the network as a whole, taking into account the actual heterogeneity of traffic. We aim to steer users through the network by (primarily) making use of the communication between in-car navigation systems. In this project we assume that the control and detection mechanisms of the roadside equipment make no use of the available floating-car data. Conversely, in-car navigation devices try to use floating-car data efficiently in order to make the best decisions regarding the speed and/or route that is being advised to the driver. Hence we focus on dynamically steering traffic flows through the network, instead of dynamically controlling traffic lights. In contrast to existing implementations, not only the individual benefits are taken into account when determining the individualized advice, but the overall performance of the global network should be considered. The PhD candidate will use statistical and probabilistic techniques to do traffic light prediction based on floating car data, and techniques from stochastic processes and operations research to incorporate queueing phenomena in the mathematical and simulation models that will be developed.

Job requirements

Candidates are expected to be fluent in English, both oral and in writing, and have an excellent background in (applied) mathematics, as evidenced by an MSc degree in preferably (applied) mathematics, or possibly econometrics, operations research or civil engineering (the latter with a specialization in traffic modeling).

Terms of employment

PhD candidates are appointed as temporary university employees for a four-year period, based on an initial one-year contract, with a three-year extension after a positive evaluation as to whether the research is expected to result in a PhD degree after four years.

The terms of employment are governed by the Collective Labor Agreement of Universities in The Netherlands, with a monthly salary starting at 2173 Euro in the first year and increasing to 2778 Euro in the fourth year, and in addition 8% holiday allowance and 8% end-of-year bonus.

Information

For further information, please contact:

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Application

In order to apply, please send a detailed curriculum vitae, along with a brief cover letter motivating your interest, to O.J. Boxma, o.j.boxma@tue.nl