

**PhD position in Mathematics (Stochastics / Statistics):** 'Estimating and optimizing with human choice behavior'

**University of Twente, The Netherlands**

Project description: A key challenge in decision problems that involve human interactions is to model how people choose from available alternatives. For example, what is the probability that a visitor of a website clicks on an online-advertisement, and how does this depend on the profile of the visitor and on properties of the ad? Or what is the probability that a person with a certain intelligence correctly answers a multiple-choice exam-question of a certain difficulty? These questions are typically addressed using so-called discrete-choice models: probabilistic models that describe how people choose from a set of alternatives with certain properties. These models are important in 'online learning', where the optimal solution of an optimization problem is gradually learned from accumulating data. Handling these joint learning-and-optimization problems requires detailed understanding of statistical estimators for discrete-choice models, but such estimators are currently only understood in a few very simple cases. In this PhD project we will develop mathematical theory on estimation and optimization with advanced discrete-choice models.

Your profile: You have a master's degree in mathematics or econometrics, with excellent grades. You have affinity for stochastics, statistics, and operations research. You are creative, ambitious, able to work independently, and you enjoy doing mathematics. You are fluent in English.

Our offer: We offer a challenging position in an inspiring environment. You will have an employment contract for the duration of 4 years and can participate in all employee benefits the University of Twente offers. The gross monthly salary starts with €125,- in the first year and increases to €718,- in the fourth year of your employment. The salary is supplemented with a holiday allowance of 8% and an end-of year bonus of 8.33%. A high-quality training program is part of the agreement. You and your supervisor will make up a plan for the additional education and supervising that you specifically need. The research has to result in a thesis at the end of the employment period. International applicants moving to the Netherlands are possibly eligible to a tax advantage policy known as the 30% ruling depending on background. The University of Twente offers attractive employment conditions, e.g., moving costs.

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