

4 PHD AND 2 PDEng POSITIONS OPTIMIZATION OF HEALTHCARE LOGISTICS

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The Center for Healthcare Operations Improvement and Research (CHOIR) is part of the faculties of Electrical Engineering, Mathematics & Computer Science and Behavioural, Management & Social Sciences. The mission of CHOIR is to help healthcare organizations to improve the efficiency, quality of care, and quality of labour through redesigning and optimizing their processes. The PhD positions will be embedded in the department of Stochastic Operations Research (SOR). The mission of SOR is to conduct mathematical education and research of internationally high standards in the areas of stochastic processes and mathematics of operations research, to contribute to the development of mathematics in a multidisciplinary engineering environment, and to contribute to a better understanding and functioning of our increasingly complex society. Research is embedded in the research institute CTIT. The PhD and PDEng positions will be embedded in the Twente Graduate School (TGS) and the course programme will be in the Dutch Network on the Mathematics of Operations Research (LNMB). PhD candidates within CHOIR are usually located at one of the collaborating hospitals/healthcare institutions for two days of the week, and work at the University of Twente for the other days of the week. PDEng candidates will be in the healthcare organisation four days per week, and at the University of Twente one day per week. In this way, PhD and PDEng candidates can on the one hand work on relevant problems from practice, and on the other hand learn from the experience of their advisors and collaboration with their fellow PhD and PDEng candidates. Once every two weeks, all researchers within CHOIR (currently: 5 professors, 2 Postdocs, 8 PhD candidates, and about 10 master students) meet during a research meeting to discuss their ongoing and finished work.

JOB DESCRIPTION

Complex care pathways require several outpatient clinic consultations, laboratory tests, imaging, assessment, multidisciplinary meetings, hospitalization, and post-operative follow-up. Complex care processes may be spread over many "episodes of care" and involve as many patient's trips to the care center. In addition to that complexity, key resources on the patient pathway like operating rooms or diagnostic imaging face complex demand patterns (variability in demand, elective vs. non elective cases) that must be addressed through a robust session management system to match access expectation from all the healthcare professionals and the patient alike.

In the PhD and PDEng projects we aim to develop a systematic approach to optimize a patient's journey, taking into account a large number of constraints and optimal usage of institution resources. We incorporate the diagnostic phase (special emphasis on one-stop-shop concepts to shorten patient LOS in care trajectory and reduce hospital visits), surgical episode and follow up phase. The project involves tactical and operational levels of planning & scheduling; on a tactical level a mathematical model will be developed to allocate capacity to patient groups and determine optimal patient routing (planning). On operational level day to day clinic operations will be optimized using dynamic patient scheduling.

The PhD and PDEng projects will be carried out in close collaboration with the following hospitals: IHU Strasbourg, Jeroen Boschziekenhuis, Sint Maartenskliniek, VU Medical Center, AMC Amsterdam, Erasmus MC, and the following industrial partners Asito, Medtronic, Ortec, Rhythm and Roche.

YOUR PROFILE

You have a master's degree in mathematics, industrial engineering, econometrics, physics, or a similar area with excellent skills in operations research and 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.

For more information about the projects of the Center for Healthcare Operations Improvement & Research (CHOIR) please look at the following link:

www.utwente.nl/ewi/sor/vacancies/

For more **information** contact prof.dr Richard Boucherie, email: r.j.boucherie@utwente.nl, phone: +31(0) 53 489 3432.

OUR OFFER

For the PhD positions 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 UT offers. For the PhD positions the gross monthly salary starts with €2.191,- in the first year and increases to €2.801,- in the fourth year of your employment.

For the PDEng positions we offer a challenging position in an inspiring environment. You will have an employment contract for the duration of 2 years and can participate in all employee benefits the UT offers. For the PDEng positions the gross monthly salary is € 1.803,- during the whole employment.

The salary is supplemented with a holiday allowance of 8% and an end-of year bonus of 8.3%.

For the PhD positions 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.

For the PDEng positions a high-quality training program is part of the agreement. You will carry out a Design Project of the Commissioning Party and the Design Results will be processed in reports. The Faculty is responsible for the training and coaching.

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.

THE ORGANIZATION

The University of Twente. We stand for life sciences and technology. High tech and human touch. Education and research that matter. New technology which drives change, innovation and progress in society. The University of Twente is the only campus university in the Netherlands; divided over six faculties we provide more than fifty educational programmes. The University of Twente has a strong focus on personal development and talented researchers are given scope for carrying out pioneering research.

The faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS) comprises three disciplines that shape Information and Communication Technology. ICT is more than communication. In almost every product we use mathematics, electronics and computer technology and ICT now contributes to all of societies' activities. The faculty works together intensively with industrial partners and researchers in the Netherlands and abroad and conducts extensive research for external commissioning parties and funders. The research which enjoys a high profile both at home and internationally, has been accommodated in the multidisciplinary research institutes MESA+, CTIT and MIRA.