

PhD-Scholarship

Crowdsourced Delivery as an Activity for Sustainable Cities

With the rapid global urbanization, mobility challenges related to the transfer of passengers and cargo are escalating in cities. European Union calls for innovative research to develop a sustainable solution to the growing urban population and logistic demand. Crowdsourced delivery is an emerging concept and has been promoted as a promising solution. In a nutshell, it is defined as outsourcing a delivery task and can benefit all involved stakeholders. The carrier can earn an extra income during his trip by picking up and delivering an outsourced parcel. On the other hand, the courier company lowers its operating costs and increases efficiency. The overall benefit for the city is reducing traffic, less congestion and minimised environmental footprints of deliveries as compared to existing solutions.

To facilitate the development of crowdsourced deliveries, this project aims at establishing and examining the concept of *Crowdsourced Delivery as an Activity*. The novelty lies in the fact that the delivery task is considered as a main or secondary activity in commuters' daily trip chain. The knowledge will then be created regarding the influential factors in motivating travelers to be a carrier of parcels preferable as a secondary activity so that the delivery tasks can be done in combination with the primary trip purpose. Courier companies can exploit the knowledge in providing the right incentive to the right people during their most suitable trips to engage as many citizens in delivery activities as possible.

This is a joint project with Eindhoven University of Technology (TU/e) under the EuroTech Alliance Program. It offers you a unique opportunity to collaborate with world-renowned researchers in TU/e under a secondment with a pre-agreed external research stay there at professor Soora Rasouli's group as well as Feixiong Liao.

Responsibilities and qualifications

Your overall focus will be to develop models and solution algorithms for optimizing crowdsourced delivery services and conduct experiments to validate the models and algorithm. You will work with scholars and industrial partners with expert knowledge within various aspects of the field. You will be rooted in the Network Modelling group, a part of the Division of Transport, Department of Management. The division also consists of research groups within transport demand, machine learning for smart mobility, transport economics and transport psychology. You will be part of an increased effort in the integrated urban mobility system with other PhD students and staff in the division.

We expect you to have the interest and ambition to pursue PhD studies and experience working with mathematical modelling and programming.

You must have a two-year master's degree (120 ECTS points) or a similar degree with an academic level equivalent to a two-year master's degree.

Your background should be in transportation, logistics, mathematical modeling, operations research, and/or programming, or related.

We furthermore expect

- Good programming capabilities in any scientific language (e.g., C++, C#, Python, Matlab, Julia, etc.)
- Good communication skills in English, both written and orally
- Willingness to engage in group-work a multi-national team

Approval and Enrolment

The scholarship for the Ph.D. degree is subject to academic approval, and the candidate will be enrolled in one of the general degree programmes at DTU. For information about our enrolment requirements and the general planning of the PhD study programme, please see <https://www.dtu.dk/english/Education/PhD/Rules>

Assessment

The assessment of the applicants will be made by the advisor team before 1 June 2022.

We offer

DTU is a leading technical university globally recognized for the excellence of its research, education, innovation and scientific advice. We offer a rewarding and challenging job in an international environment. We strive for academic excellence in an environment characterized by collegial respect and academic freedom tempered by responsibility.

In the Transport Division, we focus on improving mobility in relation to the three main challenges within this sector: 1) climate and environment 2) traffic congestion 3) traffic safety. We put numbers on traffic effects and the economic and societal effects using statistical analysis of transport behaviour. We conduct public sector consultancy for the Ministry of Transport and Housing and collaborate with transport companies and government agencies.

The division considers all scales within transport from the modelling of local pedestrian flows and bicycle traffic to international flight transport. We study all modes of transport both within passenger and freight transport. Our specific focus areas are green transport, electric cars and charging infrastructure, planning and optimization of public transport, bicycle traffic. Our research has a special focus on human behavior and we assess the socio-economic perspectives of transport, including policy instruments and welfare economic appraisal of transport projects.

Salary and appointment terms

The appointment will be based on the collective agreement with the Danish Confederation of Professional Associations. This include among other a highly attractive salary scheme and other benefits, see <https://www.dtu.dk/english/education/phd/intro/salary>. The allowance will be agreed upon with the relevant union. The period of employment is 3 years.

You can read more about [career paths at DTU here](#).

Further information

Further information may be obtained from:

Associate Professor [Yu Jiang, yujiang@dtu.dk](mailto:yujiang@dtu.dk), DTU Management

Professor Otto Anker Nielsen, oani@dtu.dk, DTU Management

You can read more about DTU Management at <https://www.man.dtu.dk/english>

You can read more about Network Modelling group at <https://tnm.man.dtu.dk/>

If you are applying from abroad, you may find useful information on working in Denmark and at DTU at [DTU – Moving to Denmark](#).

Application procedure

Your complete online application must be submitted no later than **15 May 2021 (Danish time)**.

Applications must be submitted as **one PDF file** containing all materials to be given consideration. To apply, please open the link "Apply online", fill out the online application form, and attach **all your materials in English in one PDF file**. The file must include:

- A letter motivating the application (cover letter)
- Curriculum vitae
- Grade transcripts and BSc/MSc diploma
- Applicants from institutions where the language of instruction and examination are not entirely in English are required to provide English language test (e.g. TOEFL, GRE, or IELTS)

You may apply prior to obtaining your master's degree but cannot begin before having received it. If you have finished your master degree you may attach a pdf-version of this to the application, as well as any published English papers.

All interested candidates irrespective of age, gender, race, disability, nationality, religion or ethnic background are encouraged to apply.

For more information regarding the application, please refer to

<https://www.dtu.dk/english/about/job-and-career/vacant-positions/job?id=af6a9037-478b-419f-97f9-66800e106f94>

Technology for people

DTU develops technology for people. With our international elite research and study programmes, we are helping to create a better world and to solve the global challenges formulated in the UN's 17 Sustainable Development Goals. Hans Christian Ørsted founded DTU in 1829 with a clear vision to develop and create value using science and engineering to benefit society. That vision lives on today. DTU has 12,000 students and 6,000 employees. We work in an international atmosphere and have an inclusive, evolving, and informal working environment. Our main campus is in Kgs. Lyngby north of Copenhagen and we have campuses in Roskilde and Ballerup and in Sisimiut in Greenland.