2 postdoc positions in ERC Vision: Virus Spread in Networks

Faculty: Electrical Engineering, Mathematics and Computer Science
Level: Master degree
Maximum employment: Maximum of 38 hours per week (1 FTE)
Duration of contract: 2 years
Salary scale: €2.846,00 to € 4.490,00 per month gross

Electrical Engineering, Mathematics and Computer Science

The faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS) is known worldwide for its high academic quality and the social relevance of its research programmes. The faculty's excellent facilities accentuate its international position in teaching and research. Within this interdisciplinary and international setting the faculty employs more than 1100 employees -including about 400 graduate students- and about 2100 students. Together they work on a broad range of technical innovations in the fields of sustainable energy, telecommunications, microelectronics, embedded systems, computer and software engineering, interactive multimedia and applied mathematics.

Job description

The project "**Vi**rus **S**pread **i**n **N**etworks" (ViSi$_o$N) is funded by ERC as an Advanced Grant 2020. ViSi$_o$N presents a Network Science view on virus spread in networks, in which the duality between the virus transmission process and the contact graph is key. The devastating Corona crisis reveals two major shortcomings in traditional epidemiology. First, it ignores the human contact graph and implicitly assumes a homogeneous population without specific graph structure. Second, most models for the virus spreading process relate to a Markovian setting, with exponential infection and curing times, leading to an exponential decay of the epidemic. Measurements, however, point to significantly different infection and curing time distributions. In addition, digital technology can help in constructing the contact graph and combined with medical testing, all infected can be detected. ViSi$_o$N aims to develop the theory of non-Markovian epidemic process on networks, a surprisingly missing element today, because non-Markovian theory is needed to tell, based on the characteristic infection and curing times of the virus, how long a pandemic will last and when the peak occurs. Next, ViSi$_o$N will combine all available measurement technologies to construct the best possible contact graph via temporal networking or adaptive networking. Finally, ViSi$_o$N will explore how accurately infections can be predicted under partial information of process and contact graph.

ViSi$_o$N is organized into 5 PhD tracks which work together and complement each other. In addition, 2 postdocs are added to the team.

Ideal candidate

We are looking for postdoctoral researchers that have experience (i.e. have published) in the Epidemics on Networks and have a strong interest to join a large Network Science project on "epidemics". The ideal candidate is well-versed in *mathematics, algorithms, probability theory* and *network science* and is *creative* as well. In addition, the ideal candidate should possess good

programming skills and can work independently. The ideal candidate may help and guide the PhD students in ViSi$_{o}$N.

Because of project definitions, we are primarily looking for EU citizens.

Conditions of employment

The TU Delft offers a customisable compensation package, a discount for health insurance and sport memberships, and a monthly work costs contribution. Flexible work schedules can be arranged. An International Children's Centre offers childcare and an international primary school. Dual Career Services offers support to accompanying partners. Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities.

As a PhD candidate you will be enrolled in the TU Delft Graduate School. The TU Delft Graduate School provides an inspiring research environment; an excellent team of supervisors, academic staff and a mentor; and a Doctoral Education Programme aimed at developing your transferable, discipline-related and research skills. Please visit http://graduateschool.tudelft.nl/ for more information.

Information and application

For more information about this position, please contact Prof. P. Van Mieghem, e-mail: p.f.a.vanmieghem@tudelft.nl.

Application is only possible via the TUDelft website:

https://www.tudelft.nl/over-tu-delft/werken-bij-tu-delft/vacatures/details?jobId=5678.