Network modelling of spatial distributions from large data sets

Supervisor: Vincenzo Nicosia

Research Group: Complex Systems & Networks

Funding: For September 2021 entry: Funding may be available through QMUL Principal's Postgraduate Research Studentships, School of Mathematical Sciences Studentships, and EPSRC DTP, in competition with all other PhD applications.

Studentships will cover tuition fees, and a stipend at standard rates for 3-3.5 years.

We welcome applications for self-funded applicants year-round, for a January, April or September start.

Project description:

The aim of this project is to devise models and measures for network-based characterisation of spatial information about human activity. In particular, the thesis will be focused on the investigation of new methods to construct network representations of spatial distributions (e.g. through simple, multi-layer, and time-varying graphs), on the quantification of the properties of those distributions by means of appropriate network descriptors, and on the construction of mechanistic models able to reproduce stylised facts of those data sets. Although the project is mainly methodological, there will be the opportunity to test the proposed models and measures on large data sets of real-world spatial systems, including metropolitan environments, census data, online social networks, and brain networks. The prospect candidate will possess a well-balanced mixture of mathematical and computational abilities, and should ideally have a solid background in at least two subject among discrete maths, random processes, time series analysis, graph theory, network science, scientific computing.

References

Further information:

How to apply

Entry requirements

Fees and funding