



## Job Description

This form summarises the purpose of the job and lists its key tasks. It is not a definitive list of all the tasks to be undertaken as those can be varied from time to time at the discretion of the School, in consultation with the postholder.

**Job title: Research Fellow**

**Department/Division: Statistics**

**Accountable to: Professor Milan Vojnovic**

### Job Summary

The Research Fellow will work on the research project “Scalable monitoring of network-wide events,” which involves investigators from the Department of Statistics at LSE and the Huawei Technologies Research Laboratory in Paris, France.

The research will involve the development of new foundational theories and methods for monitoring of large-scale networks and analysis of network flow data. The primary motivation scenarios and use cases are in the context of network telemetry for large-scale communication networks to enable development of future software-defined networking technologies.

The project is organised into two strands:

- 1) Core methodological developments for scalable monitoring of network-wide events. This strand involves development and evaluation of algorithmic, mathematical, and machine learning approaches for the analysis of network-wide events such as tracking of residual network connectivity and tracking of flow statistics that involve multiple observation points in a network.
- 2) Core methodological developments for optimisation of the placement of network monitoring functions. This strand involves development and evaluation of algorithmic, mathematical, and statistical approaches for recovery of various statistical properties of global network flow state, e.g. for anomaly detection caused by failures of network devices or malicious attacks.

An important part of the research is evaluation of the devised methods by developing research software and evaluation on large-scale datasets, using the state-of-the-art software frameworks such as Python and Apache Spark.

The research fellow will work on all these parts of the project, including literature reviews, methodological development, developing and documenting software code, conducting data processing and data analysis. The research fellow will be expected to take a leading role in publications arising from the project, and to present the research at national and international conferences. The research fellow will work closely with the investigators in the Department of Statistics at LSE and the Huawei Technologies Research Laboratory in Paris. The research fellow will work independently but within the project team, under the direction of the Principal Investigator (Professor Milan Vojnovic) and in close engagement with the Huawei Technologies research laboratory team members. Suitable provisioning has been planned to allow for regular visits to the premises of the Huawei Technologies research laboratory in Paris as well as for conference travel, for both the research fellow and the principal investigator.



## Duties and Responsibilities

### Range of Research Activities and Responsibilities:

- To take a lead role in the planning of research, conducting research projects and programmes independently and as part of a team
- Demonstrating the ability to analyse and research complex ideas, concepts or theories, developing and applying appropriate methodologies
- Conducting data analysis and formulating new hypotheses
- Developing creative approaches to research challenges
- Assisting in the running of the project
- Developing a body of high-quality publications in peer-reviewed outlets
- Presenting research findings at national and international conferences and seminars
- Organising conferences, seminars and workshops
- Initiating and sustaining links with external bodies to foster collaboration and influence decision-making
- Acting as a point of reference for others and contributing to the development of new knowledge and understanding within the field
- Developing an international reputation for research in their area of expertise
- Promoting the reputation of the research group and the department

### Activities relating to the administration and management and/or School service will include:

- Playing a constructive role in the life of the Department
- To assist with PhD / MSc supervision

### Note

The LSE has a progressive pay structure that rewards you with annual pay increases up to a certain level as you develop in your role. We also provide for further reward past this point in the form of further pay increases based on exceptional performance.

### Flexibility

To deliver services effectively, a degree of flexibility is needed, and the post holder may be required to perform work not specifically referred to above.

### Equality and Diversity

To uphold the School's commitment to equality of respect and opportunity, as set out in the [Ethics Code](#), we will treat all people with dignity and respect, and ensure that no one will be treated less favourably because of their role at the School, age, sex, disability, gender identity, race, religion or belief, sexual orientation, marriage and civil partnership, pregnancy and maternity, or social and economic background. For the full Equity, Diversity and Inclusion policy statement, please see the [EDI website](#)

### Environmental Sustainability

The post holder is required to minimise environmental impact in the performance of the role, and actively contribute to the delivery of the LSE Environmental Policy.