

Network Science Institute - London

Northeastern University London

Postdoctoral Research Associate in Network Science

POSITION OVERVIEW

Location	Devon House, London, E1W 1LP
Term	Fixed term 2 years
Salary	From £40,847 to £45,949 per annum. Commensurate with experience
Benefits	Generous benefits package including 25 days holiday allowance pro rata (excl. Bank holidays), group life assurance, group income protection, pension schemes and private healthcare
Start	Flexible start date
Application deadline	23:59 (BST time) on Tuesday 31 st October 2023

Positions are 100% research-focused with a two-year contract.

The role

The [Network Science Institute](#) (NetSI) at [Northeastern University London](#) (NU London) is looking for an exceptional candidate to fill an open Postdoctoral Research Associate (PDRA) position. The successful candidate will conduct world-leading research to identify the precise role of the network and that of the dynamics on the network in determining the overall behaviour at system level.

The appointed PDRA will work in the [Network Science Institute](#) supervised by [Prof Istvan Kiss](#). The PDRA will interact with members of the group, as well as PhD students, and work across a range of applications ranging from higher-order networks to technological networks exhibiting complex dynamics, both within and outside of the lab.

The PDRA will use a combination of computational and theoretical approaches to answer questions such as: “Does the presence or absence of certain network properties preclude certain behaviours as given by the bifurcation structure at the system level?” or “Does the presence or absence of certain dynamics, regardless of the network, guarantee a set number of outcomes at system-level?”. The PDRA may use machine learning approaches to analyse representative samples of networks and dynamics with the aim to empirically learn patterns and to shed light to what extent the outcome at system level depends on micro-, meso-, macro-scale network measures or dynamics. Guided by such or similar computational work, the PDRA will develop rigorous theory to back the simulation-based findings.

Duties of the PDRA will range from computational/simulation studies to theoretical and methodological work including the development and testing of efficient algorithms. In addition to the main research focus on the impact network structure and dynamics on system-level outcomes, the appointed PDRA will have opportunities to collaborate within the lab on fundamental problems in statistical network inference, and the modelling of real-world technological networks, such as utility and transportation networks.

We welcome applicants with a strong background in computational network science, network inference, statistics/mathematics, machine learning, artificial intelligence, complex systems, or other closely related fields. Our priority is to attract PDRAs who are either technically or computationally very strong and interested in asking and answering fundamental questions about the interplay of network and dynamics in determining system-level outcomes and use the findings in new and original ways in answering deep questions in network inference or related areas.

We provide an unusually rich opportunity for collegial interaction in a highly competitive environment. Mentoring will be provided by a multidisciplinary faculty team including co-investigators on the project and collaborators from computer science, mathematics and complex systems science. We know diversity fosters creativity and innovation. We are committed to equality of opportunity, to being fair and inclusive, and to being a place where all belong. We therefore particularly encourage applications from candidates in underrepresented groups within higher education.

Furthermore, the successful candidate will have the opportunity to visit and work closely with NetSI researchers in the US and collaborate with leading global experts at other institutions.

NetSI London is located in a newly refurbished research building - Moretown, near St Katharine's Dock. Moretown is the home of research at NU London and houses 70 researchers and PhD students spanning the sciences, social sciences and humanities. This truly multidisciplinary approach promotes a vibrant and intellectually robust environment where real-world challenges can be explored from multiple dimensions.

Person Specification

Qualifications

PhD in Network Science, Mathematics, Computer Science, Physics, or a related quantitative field.

Essential skills/experience:

- 1.
2. Experience in complex networks, statistical inference theory/computation or data analysis/machine learning.
3. Proficient programming skills in at least one of the following languages: Julia, Rust, Python, C++, Matlab.
4. Good communication skills in English, both spoken and written.
5. Demonstrated ability to plan, execute, and publish research.
6. Highly collaborative spirit and personal initiative.
7. Good time-management and organisational skills.

Desirable skills/experience:

1. Ability to mentor junior researchers (e.g. PhD students).
2. Experience with proposal preparations for external research funding.
3. Experience with statistical inference, especially Bayesian, both theory and computation.
4. Knowledge of fundamental data analysis tools in machine learning.

Job Duties

The appointed PDRA will be expected to carry out independent research and to publish the results of their original, significant and robust research for the benefit of the scientific community and the advancement of the field. They will also be expected to contribute to research proposals and to help mentor network science doctoral students.

Job duties will include the following roles, with distribution of time, dependent on expertise and seniority.

- 50-60% Assist in initiating, executing and completing research and analysis
- 20-25% Prepare and write research papers, presentations, grant proposals, etc
- 15-20% Data and project management
- 5-10% Collaborate and assist /graduate students in the lab

About the Network Science Institute

In 2023, NetSI established a new institute hub in London, UK at Northeastern University London. The new NetSI in London was created to advance research, education, and innovation centred around network science. The hub in London will also facilitate the development and growth of collaborations and partnerships within the UK and across Europe and US. The London hub, along with others in the US, is part of the NetSI Global program, which is dedicated to engaging and integrating regional network science communities and partnering with regional talent, institutions and ecosystems of innovation.

PDRAs will be core members of the Network Science Institute (NetSI), which has offices in Boston MA, Portland MA, and London UK. NetSI, founded in 2014, has emerged as a world leader of multidisciplinary research communities in the field of network science. NetSI brings together expertise from diverse disciplines, from the physical, information, and social sciences, with the goal to build and expand common, synthesising methodology and theory of networks, and to apply these tools to important societal challenges. Research staff will be connected to NetSI's vibrant community, with dozens of externally funded research programs, diverse faculty, and a uniquely skilled pool of doctoral students.

About Northeastern University

Founded in 1898, Northeastern is a global research university (exceeding \$200m external research funding in 2021 – 2022) and the recognized leader in experience-driven lifelong learning. Our world-renowned approach empowers our students, faculty, alumni, and partners to create impact far beyond the confines of discipline, degree, and campus.

Our locations—in Boston; Charlotte, North Carolina; London; Portland, Maine; San Francisco; Seattle; Silicon Valley; Toronto; Vancouver; and the Massachusetts communities of Burlington and Nahant—are nodes in our growing global university system. Through this network we expand opportunities for flexible, student-centred learning and collaborative, solutions-focused research.

Northeastern's comprehensive array of undergraduate and graduate programs—in a variety of on-campus and online formats—lead to degrees, through to doctorate, in nine colleges and schools. Among these, we offer more than 195 multi-discipline majors and degrees designed to prepare students for purposeful lives and careers.

Northeastern University is an equal opportunity employer, seeking to recruit and support a broadly diverse community of faculty and staff. Northeastern values and celebrates diversity in all its forms and strives to foster an inclusive culture built on respect that affirms inter-group relations and builds cohesion.

About Northeastern University London (NU London)

Formerly known as New College of the Humanities, and founded in 2012, NU London has established itself as a prestigious higher education institution based in the heart of London. After becoming part of Northeastern University's global network in early 2019, NU London has undergone a period of rapid growth, having been granted taught degree awarding powers in February 2020 and moving to new state-of-the-art premises, next to Tower Bridge, in 2021. NU London continues to grow, taking in more students every year, further expanding its courses, networks, and accelerating opportunities for research.

Enquiries

Informal enquiries may be made to Istvan Kiss (istvan.kiss@nulondon.ac.uk). To be considered for the position, applications must be made in accordance with the process specified.

Application Process

Applications should be made via [this link](#) by 23:59 on **Tuesday 31st October 2023**. Please reference your application "**PRANS0923IK**".

Please ensure that your application includes a CV and cover letter. Applicants should address the selection criteria and indicate how their background and expertise are aligned with those at NetSI and NU London. You may use bullet points if you wish.

Names and contact information of references should be provided through the cover letter. References will only be sought for finalists.

Participation in the equal opportunities section is encouraged, but voluntary. Applications are welcome from all sections of the community and will be judged on merit alone. We welcome applications from underrepresented groups.

Candidates must be able to demonstrate their eligibility to work in the UK in accordance with the Immigration, Asylum and Nationality Act 2006. We may be able to offer sponsorship for this role. Please detail your requirements in your cover letter.