Northeastern University London Fully Funded PhD Scholarship in *Philosophy*

PhD: Large Language Models: a Philosophical Assessment of their Capabilities

Northeastern University London > Faculty of Humanities

Deadline: 31/07/2024

Funded PhD Project (UK or International Students)

Funding provider: Northeastern University London (NU London)

Subject areas: Philosophy

Project start date: 1st October 2024

Supervisors (*lead):
- Brian Ball* (Northeastern University London)
- Walid Saba (Northeastern University)
- Philippe De Wilde (University of Kent)

Aligned programme of study: PhD in Philosophy

Mode of study: Full-time

The Project

The central question of this PhD project is: What are the capabilities of large language models?

Since the advent of the Transformer architecture (Vaswani et al., 2017), large language models (LLMs) have achieved remarkable results - for example, powering generative AI systems such as ChatGPT, which can produce coherent text-based responses to natural language prompts, and supporting improved machine translation processes. But LLMs result from training artificial neural networks using (statistical) machine learning techniques, and like all such systems their operations are opaque. In other words, it is not clear - even to the designers of these systems - how exactly they process inputs to produce outputs, nor (therefore) what exactly their core capabilities are.

Milliere and Buckner (2024) provide a (rare) philosophical introduction to LLMs, pointing to five traditional philosophical issues that arise in relation to them: (1) whether, as sub-symbolic systems, LLMs achieve the compositionality (hence systematicity and productivity) that is widely regarded as characteristic of human thought and language, and which symbolic systems are believed to possess; (2) whether they undermine arguments (e.g. from the poverty of the stimulus) in favour of linguistic nativism, by showing how linguistic capabilities can be learned (by domain general techniques) from available data; (3) whether they can be properly said to understand language, and ground not only linguistic but speaker meaning (i.e., roughly speaking, all three of the traditional components of meaning - sense, reference, and force); (4) to what extent (if any) LLMs contain 'world models', or achieve what is elsewhere known as 'knowledge representation' concerning non-linguistic matters; and (5) whether LLMs can support cultural learning through linguistic scaffolding.

This PhD project will address two to three of the above issues (depending on the student's specific interests and expertises), with a view to practical implications e.g. for future (explainable) AI system design, or in the context of the deployment of LLMs and their potential to contribute to problems of bias and/or generate misinformation.

The successful candidate will:

● Have strong research and analytical skills.
● Have a proven, strong educational background in philosophy or a related subject (see eligibility criteria); a background in artificial intelligence, cognitive science, or data science is welcome but not essential

- Be excited and inspired by the proposed project area
- Be an independent learner
- Have strong communication skills
- Have an inquiring mind and be willing to challenge themselves

The successful candidate will benefit from a brand new campus on the banks of the River Thames next to Tower Bridge. This is an interdisciplinary, vibrant research environment with international collaboration and networking opportunities and dedicated research space. It will form the hub of a highly experienced, multi-institution supervisory team from NU London and the University of Kent. In addition, successful candidates will benefit from the unique connection to the wider Northeastern University network in North America, providing a range of additional research opportunities and learning resources.

Shortlisted candidates will be interviewed in August 2024. Candidates are welcome to contact the NU London supervisor with informal enquiries before the application deadline: Brian Ball (brian.ball@nulondon.ac.uk).

Eligibility
- Bachelor's degree in a relevant subject - 2:1 or 1st (essential)
- Master's degree in a relevant subject (optional)

English Language requirements:
If applicable – IELTS 7 overall (with a score of at least 6.5 in each individual component) or equivalent.

Nationality
Applications are open to UK and international students. Please indicate if you are likely to require a visa on your application. We are unable to support visa costs.

Funding
This scholarship covers the full cost of tuition fees, an annual stipend (including additional London allowance, set at UKRI rates) for 3.5 years. For the 2024/2025 academic year the annual stipend is £21,237. Annual increments will be in line with UKRI rates.

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International travel

Students will have the optional opportunity to travel to Northeastern University in North America to further their research training and experience.

How to Apply

Please send a CV and a Covering Letter stating how you meet the requirements and why you are interested in the proposed research project by clicking on **this link** by **23:59 on 31st July 2024.**

Please reference your application **"PHDL0624"**.

Northeastern University London

As part of a major investment, Northeastern University London (NU London) has multiple, fully-funded PhD studentships available to accelerate its interdisciplinary research in the humanities, social sciences and digital sciences. Each scholarship is fully-funded for three and a half years (UKRI rates) and includes fees, an annual stipend, an additional London allowance and associated costs, such as training.

NU London is both a UK university governed by UK higher education regulations, and the European campus of Northeastern University – a large, top-tier research intensive, Boston-based institution. Founded in 1898, Northeastern received $230.7m of external research funding in 2022, and is the recognized leader in experience-driven lifelong learning. It has campuses across the United States and Canada (in Boston; Charlotte, North Carolina; Portland, Maine; Oakland, California; San Francisco; Seattle; Silicon Valley; Arlington, Virginia; the Massachusetts communities of Burlington and Nahant; Toronto and Vancouver). Whilst the PhD will be a UK qualification, students will have the opportunity to engage with and visit the Northeastern University network overseas as part of their London-based doctoral studies, providing a truly unique and highly sought-after dimension to their research training.

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