

**Norm Discovery in Game Theoretic Experiments**

**Start Date**: September 2024

**Application Deadline**: 23:59 GMT, 11th of August 2024

**Interview Date**: August 2024

**Royal Holloway, University of London** is inviting applications for a 4-year PhD scholarship in the Department of Computer Science at Royal Holloway, University of London, as part of the project entitled **Social Norms** , funded by the Leverhulme Trust. The research is seeking to understand how social norms develop and sustain themselves. The successful applicant will be working in game theoretic experiments using agent-based modelling and multi-agent systems learning, under the supervision of Professor Kostas Stathis (project co-investigator) in close collaboration with Professor David Levine (the Leverhulme fellow and the project’s principal investigator based in the Department of Economics) and Professor Ryan McKay (the other project co-investigator based in the Department of Psychology). Topics of interest include, but are not limited to:

- Hybrid and Adaptive Agent-based Models;

- Agent-based Modelling with Human-like behaviours;

- Norm-emergence in Agent-based Models;

- Platforms for Game-theoretic Simulations.

The student will be expected to work in an interdisciplinary team. The position will be hosted in the Centre for Intelligent Systems, in Computer Science located in the state-of-the-art premises of the School of Engineering, Physical and Mathematical Sciences in Egham.

Computer Science at Royal Holloway carries out outstanding research and delivers excellent teaching at both undergraduate and postgraduate level. We ranked 17th overall among UK Computer Science departments in the Research Excellence Framework (REF 2021, Times Higher Education ranking). We have strong research groups in the broad areas of Intelligent Systems, Machine Learning, Algorithms and Complexity, and Programming Languages and Systems, as well as good connections with the Information Security Group. We are involved in multiple inter/multidisciplinary activities, from electrical engineering to psychology and social sciences. Our research strength generates significant interest and collaborative opportunity from universities and third-stream partners.

**Project Overview**

This is a cross-disciplinary research project which brings together economists, computer scientists and psychologists with expertise in behaviour, social norms, and artificial intelligence.

The goal is to build artificial agents that mimic the behaviour of human beings in the laboratory, and particularly their ability to design and implement social norms using tools such as punishment and reciprocal altruism. There are two elements to this project.

The first is the development and training of artificial agents based on experimental data. The second is the conduct of new experiments to test, inform, and further develop the theory.

**Details of Award**

The scholarship provides standard UKRI rate stipend for each academic year (currently £19,237 for a full-time student in 2024/25) plus London Weighting of £2,000) over a period of 4 years for a full time student. It also includes a fee award to cover fees at the home fee rate (currently £4,786 for the 2024/2025 academic year).

Students who have already started their study programme are not eligible.

**Eligibility**

Applicants should have a first-class honours degree in Computer Science or a related discipline, an MSc in Artificial Intelligence (AI) and/or Machine Learning (ML), as well as software development skills in Python and/or Java/Prolog. Among desirable skills we expect candidates to have experience with agent architectures, game-theoretic simulations, the formalisation of norms, as well as the application of computers in economics. Industrial experience in the area of AI/ML will also be a plus.

**How to Apply**

Please complete an online application here:

<https://www.royalholloway.ac.uk/studying-here/applying/research-degrees/how-to-apply/>

Please select "PhD Computer Science" as the course title within the application form and prepare the following documents: (1) a covering letter that describes your reasons for wishing to pursue a PhD in this area indicating their special topic(s) of interest from the four specified above; (2) a copy of your most recent CV, including your actual or expected degree class(es), and results of all University examinations; and (3) two academic references.

In the online application, you will be asked to nominate a supervisor for the research you are looking to pursue. So please ensure that you specify the name of Prof Kostas Stathis and provide also a clear statement that you are applying for the scholarship entitled "NORM-DISCOVERY IN GAME THEORETIC EXPERIMENTS". You can also enter details towards the end of the application form, how you intend to fund your research studies, and again you can mention you will be applying for a PhD studentship.

**Further Information**

For more information about the project, the research areas, and the post, please contact Professor Kostas Stathis ([kostas.stathis@rhul.ac.uk](mailto:kostas.stathis@rhul.ac.uk)).

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*Royal Holloway is committed to equality and diversity, and encourages applications from all sections of the community. Read*[here](https://intranet.royalholloway.ac.uk/staff/your-employment/human-resources/equality-and-diversity/home.aspx)*about structures and initiatives around equality and diversity, including information on staff diversity networks.*