3 Year PhD Studentship available for September 2019

**Department:**  Neuroscience, Psychology and Behaviour

**Supervisors:**
First Supervisor: Dr Jian Liu  [jian.liu@leicester.ac.uk](mailto:jian.liu@leicester.ac.uk)
Second Supervisor: Professor Rodrigo Quian Quiroga  [rqqg1@leicester.ac.uk](mailto:rqqg1@leicester.ac.uk)

**Eligibility:**  This studentship is open to UK and EU applicants only.

**Project Title:**  Towards a Functional Model for Associative Learning and Memory Formation

**Project Description:**

Associative learning is one of the most fundamental modes of learning and memory formation in humans alike. However, the neuronal models underlying the associative learning remain elusive. Up to now, two major lines of competing models are present, i.e., the parallel distributed processing (PDP) models and the sparse coding representation (SCR) models. PDP models state that all the items are learned and stored by the entire neuronal network with the synaptic weight matrix as an ensemble; whereas SCR models depict that each individual item is learned and stored by a selective sparse subset of neurons. While PDP models have been prevailing in machine learning technologies, SCR models are becoming greatly substantiated by recent advances in experimental neuroscience.

The aim of this project is to study the most up-to-date experimental data regarding single-neuron and network learning and coding in humans, with the expectation that a functional model could be established thereon. This project involves data analysis where the data of single-unit hippocampal recordings during object recognition tasks of human subjects will be provided by the Centre for Systems Neuroscience at the University of Leicester. Based on these data, we will draw a hypothesised theoretical model that is plausible for experimental data as well as for other related published results. Furthermore, designs of new experiments based on the theoretical predictions shall also be made such that the model could be experimentally testified or falsified.
**Funding details:**

This project is in competition for a College of Life Sciences (CLS) PhD Studentship. The Studentship is for three years, starting September 2019, and offers tuition fees at UK/EU rates and a Stipend at UK Research Council rates.

**Entry requirements:**

Applicants are required to hold/or expect to obtain a UK Bachelor Degree 2:1 or better in a relevant subject. The University of Leicester English language requirements apply where applicable.

**How to apply:**

You should submit your application using our [online application system](#). We are unable to consider applications submitted by email.

Guidance for completing the online application form: Under ‘Select your area of study,’ choose ‘Neuroscience Psychology and Behaviour Research’; under ‘Select your intake date,’ choose ‘September 2019’.

In the Funding section of the application, select please state you wish to be considered for a [NPB College of Life Sciences Funded Studentship](#).

In the Research Proposal section of the application, please provide the name of the supervisor and project you want to be considered for. You do not need a research proposal but you should submit a personal statement explaining why you are interested in this project.

**Project / Funding Enquiries:** Applicants are encouraged to contact prospective supervisors by email or phone to discuss the project and their interests prior to submitting a formal application.

**Application enquiries to** [pgradmissions@le.ac.uk](mailto:pgradmissions@le.ac.uk)

**Closing date for applications:** Monday 21 January 2019