**[Postdoc Position in Computational Neuroscience](https://www.neuron.yale.edu/phpBB/viewtopic.php?t=3789" \l "p16232)**

The Decision Neuroscience Lab at UNSW Sydney has an opening for a post-doctoral researcher in computational neuroscience. This position is for two years (in the first instance, with the possibility of extension) and is being funded by the Faculty of Science under the supervision of the lab head Scientia Professor Bernard Balleine.

Scientia Professor Balleine’s lab investigates the neural determinants of goal-directed action and collects data during active behaviour from rodent and human subjects using a combination of computational modelling, signal processing techniques, and both invasive and non-invasive techniques for recording neural activity. In humans they collect behavioural and neuroimaging data, the latter using functional Magnetic Resonance Imaging (fMRI), whereas in rodents we collect behavioural and real time neuronal activity data derived from calcium imaging using both fibre photonics and endoscopic imaging.

The main focus of this role will be on the analysis of novel behavioural and neuroimaging experiments to investigate the neural mechanisms of decision making in human and rodent subjects. The successful candidate will be capable of developing novel approaches to data analysis, computational modelling of experimental data such as behavioural and imaging data and how those data are affected by various behavioural and neural manipulations.

Candidates should have a Ph.D. in neuroscience, psychology, applied mathematics, computer science, engineering, physics or a related field. Strong programming skills and prior experience in modelling, particularly machine learning areas such as reinforcement learning and deep learning models would be an advantage. Interested candidates should apply though the portal at the UNSW Sydney at the following link:

<http://external-careers.jobs.unsw.edu.au/cw/en/job/496739/postdoc-research-associate-computational-neuroscience>

## **RESPONSIBILITIES**

Specific responsibilities for this role include:

With strong quantitative and programming skills, you will have knowledge of currently relevant programming languages (e.g. Python, R, Matlab), deep learning packages such as Tensorflow or Pytorch, and experience of analysing, and perhaps with collecting, behavioural and neuroimaging data (in particular time series data derived from fMRI and/or from calcium imaging studies). You will use these skills to develop tools to quantitatively explore behavioural and neuroimaging data from decision-making tasks in rodents and humans and to present the results of that exploration.

You will have a detailed knowledge of neuroscientific concepts, especially in neuronal dynamics, statistical analysis of neuronal activity and dynamics, and/or expertise in mathematical models of neural networks with some expertise in network modelling at different levels. You will be required to work in an interdisciplinary, international environment; to approach tasks with efficiency and reproducibility in mind; to write research papers and contribute to the writing of grant applications, design, implementation and piloting of experiments in animals.

* Analyse and describe behavioural and neuroimaging data using a variety of quantitative and modelling tools
* Develop novel tools and models to analyse and present the results of behavioural and neuroimaging studies
* To work closely with neuroscientists to develop quantitative models of neural systems
* Perform other support tasks associated with general laboratory experimentation, including data analyses, literature searches, grant applications and ethics approval.
* Write scientific communications intended for publication in refereed journals.
* In consultation with Professor Balleine, supervise graduate and honours level undergraduate students during the course of specific projects.
* Cooperate with all health and safety policies and procedures of the university and take all reasonable care to ensure that your actions or omissions do not impact on the health and safety of yourself or others.

## **SELECTION CRITERIA**

* PhD in neuroscience, psychology, applied mathematics, computer science, engineering, physics or a related field
* Demonstrated experience to set up and monitor new and existing computational projects.
* Demonstrated ability to write scientific papers and to present scientific ideas and data in oral presentations
* High level of experience using scientific computing software (e.g., Python, R, Matlab etc) and computing skills including databases, spreadsheets
* Strong team player fluent in English speech and writing.
* A thorough understanding of experimental design, statistics and statistical methods and neuroscience data analysis.
* Demonstrated ability to work as part of a team and strategically contribute to research outcomes.
* Desirable: Experience working in a research laboratory environment.
* Desirable: Ability to write grant applications.
* Desirable: Knowledge of basal ganglia research and models.