

# Robert Hickman

DOCTORAL STUDENT

Department of Physiology, Development, and Neuroscience

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## Education

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2017-, Dept. of Physiology, Development, and Neuroscience, Uni. of Cambridge, PhD Computational Neuroscience

Working on a project to understand the neuronal basis of economic decision making. Wrote a software suit for simple economic decision tasks in MATLAB and trained non-human primates to complete said tasks. Operated on and recorded neurons from awake non-human primates during task performance. Modelled behaviour on tasks using multilevel regression models and modelled neuronal indicators of choices using reinforcement learning models. I also mentored a final year undergrad on a project looking at primate behaviour and auction theory. Expected to submit and defend my thesis, and publish this work, in late 2020.

2013-2016, Institute of Molecular Pathology, Vienna Biocenter, PhD Molecular Biology

Spent 3 years in the lab of Dr David Keays at the Institute of Molecular Pathology in Vienna studying the natural basis of animal magnetoreception, whilst also designing and building synthetic protein magnetoreceptors. I also mentored a Masters student on a project quantifying heavy metals in biological tissues. I left the PhD programme after 3 years without defending for personal reasons.

2010-2013, St Hughs College, Uni. of Oxford, BA Physiological Sciences

2.i final classification. Focus on neuroscience, and the neural basis of decision making. Wrote second year dissertation on drug discovery pathways in depression focusing on Ketamine therapy. For my final dissertation spent a year in the lab of Prof. Andrew King analysing neural networks built in MATLAB to predict future auditory scenes.

## Other Work Experience

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2017 (June-October), Strategic Consulting Team, Amey Consulting, Data Science Intern

Worked for 4 months in the Strategic Consulting team at Amey PLC. Worked in partnership with one other intern on two projects. One to build spatial regression models to predict fault points in the sewage system for the North West of England. The other, to write an algorithm to identify `cyclic` tops in the UK rail track infrastructure.

2017 (January-May), Dept. of Experimental Psychology, Uni. of Oxford, Research Assistant

Spent 4 months in the lab of Dr Chris Summerfield helping with experiments focused on understanding the neuronal computations underlying perception. My work focused on bug testing experiment code prior to MTurk deployment and writing pipelines for stimuli development. Code for generating 3D perceptual stimuli using python and Blender can be found on Github.

## Awards and Fellowships

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2019, Cambridge Artificial and Biological Cognition Symposium, Poster Prize

Won 1st prize for a poster presented on decoding primate neuronal activity during an economic task with Dr Daniel Hill at the Cambridge Neuroscience Symposium on Artificial and Biological Cognition.

2014, Boehringer Ingelheim Fonds, PhD Fellowship

Won a 3 year PhD fellowship for outstanding junior scientists in biomedical research. Superseeded Vienna Biocenter fellowship.

2013, Vienna BioCenter PhD Fellowship

Fully funded admission into the PhD programme at the Vienna Biocenter. Ranked 2nd out of >1000 applicants to the PhD program.

2013, Wellcome Trust, Masters Scholarship Won a £12,000 scholarship for the most promising applicant to the University of Oxford MSc degree in Pharmacology. Declined to take up my PhD position.

## Conferences and Publications

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Edelman, Nathaniel B., et al. "No evidence for intracellular magnetite in putative vertebrate magnetoreceptors identified by magnetic screening." *Proceedings of the National Academy of Sciences* 112.1 (2015): 262-267.

Meers, Zoe, Robert Hickman, and Thomas J. Leeper. "ggparliament: A ggplot2 extension for parliament plots in R." *The Journal of Open Source Software* 4 (2019): 1313.

Robert Hickman. "Considering defensive risk in Expected Threat models", *Statsbomb Conference White Paper in preparation*

## Skills

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Fluency in R, including experience teaching to both students and industry, developing analysis pipelines, and developing and publishing packages to CRAN. Work in R in my free time is published online, at my blog, as well as R user aggregation sites such as Rweekly and Rbloggers. Examples published showing proficiency in data cleaning, munging and plotting using the base language, the Tidyverse suite, and data.tables. Topics of posts vary and include a variety of statistical techniques including, but not limited to, logistic regression, maximum likelihood estimation, and clustering of social network data.

Capable programmer in python with use in both industry and academic setting. Use of NumPy and SciPy libraries. Also has experience using MATLAB in an academic setting to build neural network models of sensory systems and reinforcement learning models of animal behaviour.

Able to drive research projects having completed data science projects in a collaborative industrial setting and driving both my own PhD research alongside smaller coding projects such as CRAN hosted R packages and a research project for a sports analytics conference.

Confident at organising and presenting data having had research proposals accepted to an exclusive sports analytics conference, and having won prizes for scientific posters at academic conferences. Experienced in presenting progress in both academic and industrial data science projects to relevant stakeholders. Have contributed to, edited, and been published in academic papers in prominent journals.

Grounding in C++ as wrapped code to optimise pipeline steps, and in editing C++ code for real-time sampling of National Instruments data acquisition devices.

## Interests and Hobbies

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Outside of my work, I enjoy doing analysis of open-source datasets that interest me. Time permitting, I publish some of these on my blog at Robert-hickman.eu. From this work, I have also had articles published in online magazines, and also had the opportunity to present work on football data in a 30 minute talk to industry professionals.

When not sat at a computer, I also run and row to a highly competitive level and compete in academic quizzing championships. I also sometimes try to play the piano and accordion.