

Robert William Hickman

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Education

2010-2013, St Hughs College, University 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.

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. In my third year, I 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.

2017-, Department of Physiology, Development, and Neuroscience, University of Cambridge, PhD Computational Neuroscience

Working on a project to understand the neuronal basis of economic decision making. Wrote a software suite for simple economic decision tasks in MATLAB and trained non-human primates to complete said tasks. Assembled two electrophysiological recording setups, including debugging C++ code used to sample from *in vivo* electrodes. Operated on and recorded neurons from awake non-human primates during task performance. Modelled task behaviour using multilevel regression models and built reinforcement learning models to predict neuronal activity. 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.

Other Experience

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 another intern on two projects. The first involved building spatial regression models to predict fault points in the sewage system for the North West of England. The second necessitated designing and building an algorithm to identify `cyclic tops` in the UK rail track infrastructure.

2017 (January-May), Department of Experimental Psychology, Research Assistant

Spent 4 months in the lab of Dr Chris Summerfield as an assistant to experiments focused on understanding the neural 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 [github link].

Awards

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.

2013, Vienna BioCenter PhD Fellowship

Fully funded admission into the PhD programme at the Vienna Biocenter.

2014, Boehringer Ingelheim Fonds, PhD Fellowship

3 year PhD fellowship for outstanding junior scientists in biomedical research. Superseded Vienna Biocenter fellowship.

2019, Cambridge Artificial and Biological Cognition Symposium, Poster Prize

Won 1st prize for a poster presented with Dr Daniel Hill at the Cambridge Neuroscience Symposium on Artificial and Biological Cognition.

Conferences and Publications

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*

Relevant Skills

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 won 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 to interface with MATLAB task code via a TCP/IP handshake.

Interests and Hobbies

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.