PhD in visual cognitive computational neuroscience

Supervisor: Dr. Kamila Maria Jozwik, Jozwik lab, University of Cambridge

Application deadline: 23 March 2026

Application link: https://www.postgraduate.study.cam.ac.uk/courses/directory/cvbspdbsc (Please note that this link incorrectly lists March 13 as the application deadline; the new deadline is March 23. You will be able to submit the application from March 20 onwards, when the portal reopens after the content freeze.)

PhD fees status: Home fees only (https://www.postgraduate.study.cam.ac.uk/finance/fees/what-my-fee-status), 4 years, fully funded

Start date: October 2026

College: You must select Churchill College as your first college choice, as part of the funding is coming from the college.

The Jozwik lab studies visuo-semantic cognition combining cognitive science, neuroscience, and computational modelling. The lab's research has focused on probing specific visual dimensions in the context of face, animacy, and object representations more generally. We collect and analyse human behavioural and brain imaging (fMRI and M/EEG) data. We also analyse macaque electrophysiology data obtained through collaborations and perform cross-species comparisons. We use machine learning techniques for neural data analysis and computational modelling with a special interest in biologically-inspired deep learning and AI models (NeuroAI). The computational models we work with include vision deep learning models (including topographical, recurrent, or developmentally inspired models), multimodal vision and language models, and Large Language Models. Please find prior work here: (Google Scholar: https://scholar.google.com/citations?hl=en&user=oEifmSgAAAAJ&view_op=list_works&sortby=pubdate). We also began exploring how to apply our expertise in visuo-semantic cognition and AI to neurotechnology (Focused Ultrasound Stimulation) and understanding mental health conditions.

The PhD student is welcome to work on one (or more) of the three aspects of the research programme funded by the Royal Society that aims to disentangle and model behaviourally-relevant visual and semantic dimensions (characteristics of objects: "curved", "pink", "having eyes", "being animate", "having agency", or ones that are hard to name) of visual cognition in the human brain, while increasing the ecological validity of experiments (including mobile EEG and immersive technologies), in the light of the below three aims. Note Dr. Jozwik would be happy to discuss PhD projects related to these aims, as there is some flexibility in research directions.

1) characterise behaviourally-relevant visual and semantic dimensions by the use of large-scale brain imaging datasets of responses to images and model these representations with computational models and validate these predictions in follow-up neuroimaging experiments,

2) define and model dimensions related to the perception of animacy when interacting with objects and people using videos (behaviour, fMRI, and MEG),

3) determine to what extent these brain representations and dimensions change when humans are immersed in the environment (VR/AR and/or mobile EEG).

The ideal candidate will have:
- extensive experience in programming in Python or Matlab and data analysis (essential, please note that coursework coding during an undergraduate or Master's degree will likely not be enough)
- substantial research experience (essential, e.g., through research MPhil/Master's degree, or research assistant job)
- experience with behavioural and neuroimaging (fMRI, M/EEG) data design/collection/analysis
- experience in machine learning and AI
- a collaborative approach to doing science and willingness to help other lab members
- curiosity and motivation to work on the proposed or related research questions.

Before applying, please contact Kamila Maria Jozwik (Royal Society University Research Fellow and Assistant Research Professor, jozwik.kamila@gmail.com or kj287@cam.ac.uk).
In the initial email, please include:
- your CV
- information about your programming, computational modelling, and relevant research, data collection and analysis experience (fMRI, M/EEG, neuromodulation, electrophysiology, behaviour)
- details of journal and conference publications, preprints, and research theses
- Please also ask 2-3 of your referees, ideally with whom you have worked on research projects, to email their reference letters to Dr. Jozwik.

Lab research environment: The Jozwik lab is based at the MRC Cognition and Brain Sciences Unit, University of Cambridge, with links to broader Cambridge (e.g., Cambridge NeuroWorks powered by Advanced Research and Invention Agency) and international scientific ecosystems (e.g., the Center for Brains, Minds & Machines, now MIT Quest for Intelligence). The Unit has an on-site 3T fMRI scanner (with access to a 7T fMRI scanner within cycling distance), an MEG scanner, EEG systems, Focused Ultrasound, Transcranial Magnetic Stimulation, and dedicated methods and computing support staff. The Unit runs two MPhil Programs: Cognitive Neuroscience and NeuroAI, and PhD students have the opportunity to supervise MPhil students. The lab values commitment to rigorous, open science, supports diversity in all its meanings, and drives curiosity in a supportive, multidisciplinary, and international research environment.