Durham University
Department of Psychology

Prof. Alex Easton - Psychology, Durham University

A real-world approach to navigation and memory

Background

There is a significant gap in our understanding around navigation and memory. These are well understood both in the lab and in the real world, but the connection between the two is often challenging. In particular, the nature of the complex real world interaction between different and dissociable memory systems needs to be better understood to bridge this fundamental gap in our understanding (e.g. Easton & Parui, 2025).

Our lab has recently made attempts to try and bridge this gap through making clear links between neural and cognitive models (Ross & Easton, 2022), or developing human tasks that mirror animal tasks (Ross et al 2024) which allows new understanding of memory to be made across species (Collaro et al, 2024). We've also made use of multi and interdisciplinary approaches to derive new theoretical perspectives on memory that puts reconstruction at the heart of neural models of memory (e.g. Easton et al, 2024).

Aims and Methods

The suggested project will explore novel ways of investigating either episodic memory and/or navigation in a way that allows knowledge to be built between memory in the laboratory and memory in the real world. This might be through animal work, human behavioural experiments, or making use of interdisciplinary methods including anthropological approaches or linguistic and literature based approaches.

Relevance

Bridging the gap between the lab and the real world will increase our chances of translating drug discovery from the lab to the clinic to improve memory ability in an ageing population or in disease.

Training

The candidate's research activity will be based in Durham, Psychology. Besides a training in general research skills, the candidate will develop a deeper understanding of multiple techniques with behaviour at their heart (in either rodents or humans). The candidate will also join a wide ranging interdisciplinary team dealing with these questions and will gain exposure to and training in interdisciplinary methods where appropriate.

Suitable for

PhD and MSc by Research students.

References and Further Reading

Easton & Parui (2025) Driving forward a new perspective on everyday memory in the real world. *Neuroscience* https://doi.org/10.1016/j.neuroscience.2025.10.058

Ross & Easton (2022) The hippocampal horizon: Constructing and segmenting experience for episodic memory. *Neuroscience and Biobehavioral Reviews* https://doi.org/10.1016/j.neubiorev.2021.11.038

Ross, Slater & Easton (2024) Turns around periodic spatial boundaries facilitate increasing event segmentation over time *Royal Society Open Science* https://doi.org/10.1098/rsos.240835

Collaro, Barton, Ainge & Easton (2024) Measuring episodic memory and mental time travel: Crossing the species gap. *Philosophical Transactions of the Royal Society Part B* https://doi.org/10.1098/rstb.2023.0406

Easton, Horner, James, Kendal, Sutton & Ainge (2024) Context in memory is reconstructed, not encoded. *Neuroscience and Biobehavioral Reviews* https://doi.org/10.1016/j.neubiorev.2024.105934