Tom George

Post-doctoral fellow in ML and theoretical neuroscience,
also building open-source software for science
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ACADEMIC POSITIONS

Post-doctoral Fellow and Canadian Neuroanalytic Scholar, Mila (Quebec AI Institute) | Advisors: Prof. Blake Richards (McGill), Prof. Guillaume Lajoie (UdeM) — 2025-

EDUCATION

PhD, Sainsbury Wellcome Centre, UCL | Advisors: Claudia Clopath (Imperial), Kimberley Stachenfeld (DeepMind) and Caswell Barry (UCL). Member of **Google DeepMind NeuroLab**. — 2020–25

Herchel Smith Scholarship, Harvard University | Prestigious and fully funded scholarship to study at Harvard. Advisors: Prof. Cengiz Pehlevan & Prof. Sam Gershman — 2019–20

BA, MA & MSci, Physics (Natural Sciences), University of Cambridge — 2015–19
1st Class (Part III), 1st Class (Part II), 1st Class (Part I)

AWARDS

Canadian Neuroanalytic Scholarship | Post-doctoral fellowship of 140,000CAD — 2026-28
UCL Early Career Neuroscience Prize | Junior category — 2023
Herchel Smith Scholarship | Full-funded scholarship to Harvard from Emmanuel College — 2019
Emmanuel Senior Scholarship and John Mainhood Prize | for academic achievement — 2016-18

SOFTWARE

RatInABox | Creator and maintainer of a popular python package for generation of motion and neural data in spatial environments (*>55,000 PyPI downloads*). Link. — 2022
SIMPL | Open-source package for neural latent data analysis. Link. — 2024

INDUSTRY

X AI Residency, Google | Foundation models for geophysics. Mountain View, California. — 2025
ML consultant, Mltpl | ML tools for automated business valuations — 2023-24

TECHNICAL SKILLS

Programming | Python (very proficient inc. Jax), bash, Julia [github.com/TomGeorge1234].
Machine Learning | NLPs, ANNs, CNNs, RNNs, generative models (PyTorch, tensorflow).
Languages | English (Native), Spanish (DELE B1 equivalent).

TEACHING & OUTREACH

TReND-CaMinA | Co-founder and organizer of a neuroscience and ML summer school in Africa. Secured >$150,000 funding. (Ghana 2023, Rwanda 2024, Zambia 2025, Senegal 2026) — 2023-26

NeuroAI summer school | University of Amsterdam, invited lecturer on model-free RL. — 2024

ACADEMIC PLACEMENTS

Caltech | Summer Undergraduate Research Fellow, Prof. A. Thompson — 2018
Okinawa Computational Neuroscience Course (OCNC) | Summer school participant — 2022
Okinawa Institute of Science and Technology (OIST) | Research intern with Prof. Tomoki Fukai — 2022

SELECTED INVITED TALKS

Oxford University, Cortex Club | RatInABox (see open source). — 2024
Google DeepMind, London | Optimizing internal representations (NeuroLab workshop)
Imperial, Pint of Science | Public outreach talk on "The language of the brain"
ICLR TinyPapers workshop oral | Neural oscillations and eligibility traces, Kigali, Rwanda — 2023
Google DeepMind, London | The Helmholtz hippocampus (NeuroLab workshop)
UCL Neuroscience Symposium (prize winner) | How hippocampus learns predictive maps?
Spring Hippocampal Research Conference, Verona | RatInABox (see open source).
MILA Neural-AI reading group | Biological Reinforcement Learning in the Hippocampus. — 2022

SELECTED PUBLICATIONS

T. M. George (2025). SIMPL: Scalable and hassle-free optimisation of neural representations from behaviour. *International Conference on Learning Representations (**ICLR**)*

T. M. George (2023). A generative model of the hippocampal formation trained with theta driven local learning rules. *Advances in Neural Information Processing Systems (**NeurIPS**)*

E. Thompson, …, **T. M. George** et al. (2024) Replay of procedural experience is independent of the hippocampus. *(Under review at **Nature**)*

T. M. George (2023). Theta sequences as eligibility traces: A biological solution to credit assignment. *Tiny Papers Track at **ICLR** 2023, Kigali, Rwanda. Paper (accepted for oral pres.)*

T. M. George, M. Rastogi, W. de Cothi, C. Clopath, K. Stachenfeld, & C. Barry (2024). RatInABox: An open source toolkit for modelling locomotion and neuronal activity in continuous environments. eLife

T. M. George*, W. de Cothi*, K. Stachenfeld, & C. Barry (2022). Rapid learning of predictive maps with STDP and theta phase precession. *eLife*.

T. M George, G. E. Manucharyan, & A. F. Thompson (2021). Deep learning to infer eddy heat fluxes from sea surface height patterns of mesoscale turbulence. *Nature Communications.*

T. M. George & P. Liò (2019). Unsupervised Machine Learning for Data Encoding applied to Ovarian Cancer Transcriptomes. *bioRxiv*.

REVIEWING

Area chair, ICLR 2023 and 2024 | TinyPapers workshop
Reviewer, NeurIPS 2023 | Associative Memory & Hopfield Networks workshop

CONFERENCE POSTERS ETC.

COSYNE 2024 poster: C. Barry, M. Rastogi, W. de Cothi, C. Clopath, K. Stachhenfeld, **T. M. George** (2024) RatInABox: A unified Python framework for modelling spatial behaviour and neural data

COSYNE 2024 poster: **T. M. George**, C. Barry, K. Stachenfeld, C. Clopath, T. Fukai (2024) The Helmholtz Hippocampus: A biologically plausible generative model of the Hippocampal formation

NeurIPs 2023 poster: **T. M. George**, C. Barry, K. Stachenfeld, C. Clopath, T. Fukai (2024) The Helmholtz Hippocampus: A biologically plausible generative model of the Hippocampal formation

COSYNE 2024 poster: **T. M. George**, W. de Cothi, K. Stachenfeld, C. Barry (2022). Rapid learning of predictive maps with STDP and theta phase precession.

SFN 2022 poster & Cosyne 2023 Talk: E. Thompson, L. Rollik, **T. M. George*** et al., Replay of motor sequences in DLS during consolidation using an unsupervised point process model.

SFN 2021 poster: A. Onih, **T. M. George**, S. Nierwetberg & A. Akrami. Pupil dilation as a proxy for statistical learning in freely moving mice and humans.

Reservoir networks for unsupervised statistical learning (2021) (Github https://tinyurl.com/3mmpjj6r). Advisors: Dr. Athena Akrami & Prof. Claudia Clopath

Pupillometry protocol and pipeline for studying temporal structure learning in humans (2021) (Github, https://tinyurl.com/2nr4c72t). Advisors: Dr. Athena Akrami & Prof. Claudia Clopath

Deep learning to explain mixed selectivity of neurons in the prefrontal cortex (2020) (https://tinyurl.com/2p8zdd8w). Advisor: Prof. Cengiz Pehlevan & Prof. Sam Gershman