Tom George

PhD candidate in ML and theoretical neuroscience,
also building open-source software for science
Cambridge | Harvard | UCL | Google

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EDUCATION	**PhD, Sainsbury Wellcome Centre, UCL |** Advisors: Prof. Claudia Clopath (Imperial), Dr. Kimberley Stachenfeld (DeepMind/Columbia) and Prof. 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 1st Class (Part III), 1st Class (Part II), 1st Class (Part I)	2015–19
AWARDS	**UCL Early Career Neuroscience Prize |** Junior category	2023
	Herchel Smith Scholarship | to Harvard, awarded by Emmanuel College Cambridge	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 (>36,000 PyPI downloads) **KalMax |** Jax-optimised Kalman filtering and likelihood-based decoding	2022
TECHNICAL SKILLS	**Programming |** Python (Highly proficient), Julia, bash [github.com/TomGeorge1234]. **Machine Learning |** NLPs, ANNs, CNNs, RNNs, generative models (PyTorch, tensorflow). **Languages |** English (Native), Spanish (DELE B1 equivalent).	
INDUSTRY	**X AI Residency, Google |** Mountain View, California	2025
	ML consultant, Mltpl | ML tools for automated business valuations	2023-24
TEACHING & OUTREACH	**TReND-CaMinA |** Co-founder and organizer of a neuroscience and ML summer school in Africa. Secured >$100,000 funding. (Ghana 2023, Rwanda 2024, Zambia 2025, Senegal 2026)	2023-25
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** (2024). SIMPL: Scalable and hassle-free optimisation of neural representations from behaviour. *(Under review at **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