

CHEN SUN

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Citizenship: Canadian

July 28, 1992

RESUME SUMMARY

To solve memory consolidation for personalized wisdom and open ended discovery.

WORK/EDUCATION

Mila		2020–2023
• Banting Postdoctoral Fellow	Labs of Yoshua Bengio and Blake Richards	
MIT		2013–2020
• PhD in Neuroscience	Lab of Susumu Tonegawa (Nobel 1987 Medicine)	
UNIVERSITY OF CAMBRIDGE		2010–2013
• BA in Natural Sciences		

PRIMARY PUBLICATIONS

- Sun, C.[†], *et al.* How new data permeates LLM knowledge and how to dilute it. *ICLR*, *Spotlight, 2025.
- Sun, C.[†], Miller, N.A., Zhmoginov, A., Vladymyrov, M., Sandler, M. Learning and unlearning of fabricated knowledge in language models. *ICML Workshop on Mechanistic Interpretability*, *Spotlight, 2024.
- Sun, C.[†], Yang, W., Alsbury-Nealy, B., Jiralerspong, T., Malenfant, D., Bengio, Y., and Richards, B.[†] Contrastive Retrospection: honing in on critical steps for rapid learning and generalization in RL. *Advances in Neural Information Processing Systems*, 2023.
- Sun, C.[†], Yang, W., Martin, J., Tonegawa, S.[†] Hippocampal neurons represent events as transferable units of experience. *Nat Neurosci.* 2020 May;23(5):651-663. doi: 10.1038/s41593-020-0614-x. Epub 2020 Apr 6.
- Sun, C.*[†], Kitamura, T.*[†], Yamamoto, J., Martin, J., Pignatelli, M., Kitch, L.J., Schnitzer, M.J., Tonegawa, S. Distinct speed dependence of entorhinal island and ocean cells, including respective grid cells. *Proc Natl Acad Sci U S A.* 2015 Jul 28;112(30):9466-71. doi: 10.1073/pnas.1511668112. Epub 2015 Jul 13. PMID: 26170279; PMCID: PMC4522738.
- Kitamura, T.*[†], Sun, C.*[†], Martin, J., Kitch, L., Schnitzer, M., and Tonegawa, S. Entorhinal cortical ocean cells encode specific contexts and drive context-specific fear memory. *Neuron*, 87(6):1317–1331, 2015. ISSN 0896-6273.

COLLABORATIONS:

- Yang, W., Sun, C., Huszár, R., Hainmueller, T., Buzsáki, G. Selection of experience for memory by hippocampal sharp wave ripples. *Science*, 2024.
- Malkin, N., Jain, M., Bengio, E., Sun, C., and Bengio, Y. Trajectory balance: Improved credit assignment in GFlownets. *Advances in Neural Information Processing Systems*, 2022.
- Liu, D., Lamb, A. M., Kawaguchi, K., Goyal, A. G., Sun, C., Mozer, M. C., and Bengio, Y. Discrete-valued neural communication. *Advances in Neural Information Processing Systems*, volume 34, pp. 2109–2121. Curran Associates, Inc., 2021.
- Roy, D. S., Kitamura, T., Okuyama, T., Ogawa, S. K., Sun, C., Obata, Y., Yoshiki, A., and Tonegawa, S. Distinct neural circuits for the formation and retrieval of episodic memories. *Cell*, 170(5):1000–1012.e19, 2017. ISSN0092-8674. doi: <https://doi.org/10.1016/j.cell.2017.07.013>.

- Wagatsuma, A., Okuyama, T., **Sun, C.**, Smith, L.M., Abe, K., Tonegawa, S. Locus coeruleus input to hippocampal CA3 drives single-trial learning of a novel context. *Proc Natl Acad Sci U S A*. 2018 Jan 9;115(2):E310-E316. doi: 10.1073/pnas.1714082115.

AWARDS

FUNDING AWARDS

- Banting Postdoctoral Fellowship** 2021
Ranked 1st out of all 253 candidates for the two-year \$140,000 (total) fellowship.
- Blyth Cambridge Scholarship** 2010
One of 2 Canadian students awarded a full \$150,000 scholarship to the University of Cambridge.

MATHEMATICS AWARDS

- International Mathematical Olympiad (IMO)**; Silver medallist 2010
- International Mathematical Olympiad (IMO)**; Silver medallist 2009
- Asian Pacific Mathematical Olympiad (APMO)**: Placed 1st in Canada 2009
- International Mathematical Olympiad (IMO)**; Bronze medallist 2008
- Canadian Mathematical Olympiad (CMO)**: Placed 1st in Canada 2008

SCIENCE AWARDS

- Cambridge-Caltech Exchange award** 2012
One of 2 students awarded scholarships from Pembroke College, Cambridge to Caltech.
- Amgen Scholar** 2011
One of 15 students selected from across Europe for a summer scholarship from the Amgen Foundation to do research at the University of Cambridge.
- Intel International Science and Engineering Fair (ISEF)** 2008
Silver medallist; honour of asteroid named (25039) Chensun

INVITED TALKS

- UCLA SYNCS Speaker 2024
- University of Toronto Ebbinghaus Colloquium Speaker 2023
- Titisee Conference on Neuro-AI 2023
- Microsoft Research Seminar Speaker 2022
- Public Journal Club of Neurobiology 2020

MENTORSHIP & TEACHING

- Mentored 2 undergraduate students of Canada's Indigenous community through IMPRESS 2022
- Average Rating of 6.8/7 from Student evaluations from across 4 years of teaching at MIT 2015-2018

VOLUNTEER

- Committee selection for Team Canada to Intel ISEF** 2012-2023
On the committee to screen the depth and originality of research proposals from budding Canadian students, for selection to Team Canada.
- Graduate Student representative, MIT BCS Seminars Committee** 2017-2020
I was the PhD student representative for hosting the esteemed MIT Teuber Lecture speaker.
- Lecturer, Organizer, Math Challenge at Western** 2007-2016
Guest lecturer and volunteer at the maths seminars in my hometown (London, Ontario) to teach young students (age 10-18) from public schools, to do maths competitions.