

Keiland W. Cooper

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EDUCATION

University of California, Irvine

Ph.D., Neuroscience

Advisor: Dr. Norbert Fortin

In progress

Indiana University, Bloomington

B.S., Cognitive Science, *with Honors*

Computation specialization

Certificate in Neuroscience; Minor in Psychology

Advisors: Dr. Ehren Newman, Dr. Mike Jones

May 4th 2019

THESIS

- [1] Cooper K. W. (2019) Cholinergic modulation may explain hippocampal encoding and retrieval mode switching. Indiana University, Bloomington Undergraduate Thesis.

PREPRINTS

- [2] Lomonaco V., Pellegrini L., Cossu A., Carta A., Graffieti G., ... Cooper K. W., ... Bacciu D., Maltoni D. (2021) Avalanche: an End-to-End Library for Continual Learning arXiv preprint 2104.00405 <http://arxiv.org/abs/2104.00405>
- [3] Shahbaba, B., Li, L., Agostinelli, F., Saraf, M., Elias, G. A., Cooper, K. W., Baldi, P., Fortin, N. J. (2020). Hippocampal ensembles represent sequential relationships among discrete nonspatial events. (Under review)

REFEREED PUBLICATIONS

- [4] Gerkin, R. C., Ohla, K., Veldhuizen, M. G., Joseph, P. V., Kelly, C. E., Bakke, A. J., ... Cooper, K. W. ..., Baguma, M. (2020). Recent smell loss is the best predictor of COVID-19 among individuals with recent respiratory symptoms. *Chemical senses*, 46.
- [5] Pierron, D., Pereda-Loth, V., Mantel, M., Moranges, M., Bignon, E., Alva, O., Cooper, K. W., ... Dinnella, C. (2020). Smell and taste changes are early indicators of the COVID-19 pandemic and political decision effectiveness. *Nature Communications*, 11(1), 1-8.
• #4 of Top 2020 *Nature Communications* papers
- [6] Cooper, K. W., Brann, D.H., Farruggia, M.C., Bhutani, S., Pellegrino, R., Tsukahara, T., Weinreb, C., Joseph, P.V., Larson, E.D., Parma, V. and Albers, M.W., 2020. COVID-19 and the chemical senses: supporting players take center stage. *Neuron*. 107(2), 219-233
- [7] Parma, V., Ohla, K., Veldhuizen, M. G., Niv, M. Y., Kelly, C. E., Bakke, A. J., Cooper K. W. ..., Hayes, J. E. (2020). More than smell- COVID-19 is associated with severe impairment of smell, taste, and chemesthesis. *Chemical Senses*, 45(7), 609-622.
- [8] Pellegrino, R., Cooper, K. W., Di Pizio, A., Joseph, P. V., Bhutani, S., Parma, V. (2020). Coronaviruses and the chemical senses: past, present, and future. *Chemical senses*, 45(6), 415-422.

- [9] Hernandez-Perez, J. J., Cooper, K. W., Newman, E. L. (2020). Medial entorhinal cortex activates in a traveling wave in the rat. *eLife*, 9
- [10] Cooper, K. W. (2018). Can the Machine Understand: An Evidence Based Approach to the Chinese Room. *IU Journal of Undergraduate Research*, 4(1), 82-85

SELECTED ABSTRACTS + TALKS

- [1] Cooper, K. W., Shahbaba, B., Li, L., Agostinelli, F., Saraf, M., Elias, G. A., Bornstein, A., Baldi, P., Fortin, N. J. (2021). Hippocampal theta oscillations support nonspatial sequence coding in hippocampal neurons. *Society for Neuroscience Global Connectome*
- [2] Cooper K. W. (2020) The neuroscience / AI feedback loop: Catastrophic Forgetting and Sequences. *UCI AGS Symposium*
- [3] Cooper K. W. (2020) Dual processes of hippocampal mode switching. *Neuromatch Conference*
- [4] Cooper K. W. (2020) Cholinergic abolition disrupts encoding and retrieval mode switching. *11th Annual Emerging Scientists Symposium*
- [5] Hernandez J, Cooper K. W., Newman E.L. (2018) Is theta a traveling wave in the medial entorhinal cortex? Program No. 330.10. *Society for Neuroscience*
- [6] Cooper K. W, Dachapally P.R, Jones M.N (2018) Consequences of Catastrophic Forgetting on Semantic Representations Learned by Deep Neural Embedding Models, *Midwest Cognitive Science Conference*
- [7] Cooper K. W. (2017) Bridging the Gap: Natural Computation and Neural Systems. *Indiana University Undergraduate Research Conference*.

AWARDS

Graduate Research Fellow	National Science Foundation	2021
Pedagogical Fellow	UC Irvine DTEI	2020
UC Irvine Recruitment Fellowship	UC Irvine	2020
Graduate Research Fellow, Honorable Mention	National Science Foundation	2021
Cognitive Science Outstanding Research Award	Indiana University	2021
Ewing Prize in Philosophy	Indiana University	2021
Cognitive Science Outstanding Research Award	Indiana University	2021

TEACHING

Autonomous Robotics	<i>Co-instructor</i>	<i>Indiana University</i>	2019
Programming in Cognitive Sciences	<i>Co-instructor</i>	<i>Indiana University</i>	2018
Mind, Memory, and the Brain	Teaching Assistant	<i>UC Irvine</i>	2021
Neurobiology and Behavior Lab	Teaching Assistant	<i>UC Irvine</i>	2020
Brain and Behavior	Teaching Assistant	<i>UC Irvine</i>	2020
Cognitive Psychology	Teaching Assistant	<i>Indiana University</i>	2018
Introduction to Neuroscience	Teaching Assistant	<i>Indiana University</i>	2017

SCI COMM +
OUTREACH

AskANeuroscientist	<i>Founder; K-12 class Q/A (reached >400 students)</i>
Hoosier STARS	<i>Co-founder; K-12 class neuro demos (reached >300 students)</i>
CNLM Ambassadors	<i>Co-chair; SoCal Learning and memory outreach</i>
UCI End Racism	<i>Working group contributor addressing systemic racism</i>
Quora Writer	<i>Answers to neuroscience and AI questions; 800k+ views</i>
Peer reviewer	<i>Physiological Reviews; CVPR</i>

NETWORKS

Cognitive Science Society	Psi Chi	ContinualAI (co-founder)
Society for Neuroscience	Sigma Xi	Carboncopies Foundation
Indiana Academy of Science	Sigma Alpha Pi	AI for People

SERVICE

Physiological Reviews
CVPR

TRAININGS +
WORKSHOPS

Estes Cognitive Electrophysiology Workshop	University of Pennsylvania	2021
NIH Grant Writing Workshop	UC Irvine	2020
HHMI Productivity Workshop	UC Irvine	2020
Nonlinear Dynamics: Math and Comp Approaches	Santa Fe Institute	2021
Cognitive Science Outstanding Research Award	Indiana University	2021
Ewing Prize in Philosophy	Indiana University	2021
Cognitive Science Outstanding Research Award	Indiana University	2021

PRESS

- [1] Cooper, K. W., Shahbaba, B., Li, L., Agostinelli, F., Saraf, M., Elias, G. A., Bornstein, A., Baldi, P., Fortin, N. J. (2021). Hippocampal theta oscillations support nonspatial sequence coding in hippocampal neurons. Society for Neuroscience Global Connectome
- [2] Cooper K. W. (2020) The neuroscience / AI feedback loop: Catastrophic Forgetting and Sequences. UCI AGS Symposium
- [3] Cooper K. W. (2020) Dual processes of hippocampal mode switching. Neuromatch Conference
- [4] Cooper K. W. (2020) Cholinergic abolition disrupts encoding and retrieval mode switching. 11th Annual Emerging Scientists Symposium
- [5] Hernandez J, Cooper K. W., Newman E.L. (2018) Is theta a traveling wave in the medial entorhinal cortex? Program No. 330.10. Society for Neuroscience
- [6] Cooper K. W, Dachapally P.R, Jones M.N (2018) Consequences of Catastrophic Forgetting on Semantic Representations Learned by Deep Neural Embedding Models, Midwest Cognitive Science Conference
- [7] Cooper K. W. (2017) Bridging the Gap: Natural Computation and Neural Systems. Indiana University Undergraduate Research Conference.

ERDÖS N=4

as of 2021:

Paul Erdős → Noga Alon → Nicolò Cesa-Bianchi → Fabio Cuzzolin

as of 2019:

Paul Erdős → Ronald L. Graham → Feng Zhou → Michael J. Kahana → Ehren L. Newman