

Keiland W. Cooper

Graduate Scholar
Department of Neurobiology and Behavior
University of California, Irvine
CV last updated May 16, 2021

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EDUCATION

University of California, Irvine

Ph.D., Neuroscience

In progress

Advisors: Dr. Norbert Fortin

Indiana University, Bloomington

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

May the Fourth, 2019

Computation specialization

Certificate in Neuroscience; Minor in Psychology

Advisors: Dr. Ehren Newman, Dr. Mike Jones

AWARDS

Norman Weinberger Award	UCI CNLM	2021
Graduate Research Fellowship (GRFP)	National Science Foundation	2021
Best International AI Research Organization	Wealth & Finance	2020
DTEI Pedagogical Fellowship	UC Irvine	2020
UC Irvine Recruitment Fellowship	UC Irvine	2019
Cognitive Science Outstanding Research	Indiana University	2019
GRFP (Honorable Mention)	National Science Foundation	2018
Ewing Prize in Philosophy	Indiana University	2018
Outstanding Contribution in Cognitive Science	Indiana University	2018
Cognitive Science Research Project Award	Indiana University	2018
Cognitive Science Research Project Award	Indiana University	2017

PREPRINTS

- [10] Avalanche: an End-to-End Library for Continual Learning
Vincenzo Lomonaco, Lorenzo Pellegrini, Andrea Cossu, Antonio Carta, Gabriele Graffieti, ... Keiland Cooper, ... Davide Bacciu, Davide Maltoni. (2021) arXiv preprint
- [9] Hippocampal ensembles represent sequential relationships among discrete nonspatial events
Shahbaba, B., Li, L., Agostinelli, F., Saraf, M., Elias, G. A., Cooper, K. W., Baldi, P., Fortin, N. J.. (2021) Under Review

PUBLISHED

- [8] Recent smell loss is the best predictor of COVID-19 among individuals with recent respiratory symptoms.
Gerkin, R. C., Ohla, K., Veldhuizen, M. G., Joseph, P. V., Kelly, C. E., Bakke, A. J., ... Cooper, K.W. ... and Baguma, M. . (2020) Chemical senses
- [7] Smell and taste changes are early indicators of the COVID-19 pandemic and political decision effectiveness.

Pierron, D., Pereda-Loth, V., Mantel, M., Moranges, M., Bignon, E., Alva, O., Cooper, K. W., ... Dinnella, C. . (2020) *Nature Communications*
 • #4 of Top 100 *Nature Communications* papers of 2020

- [6] COVID-19 and the chemical senses: supporting players take center stage.
 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) *Neuron*
 • Top ten *Neuron* papers of 2020
- [5] More than smell COVID-19 is associated with severe impairment of smell, taste, and chemosynthesis.
 Parma, V., Ohla, K., Veldhuizen, M. G., Niv, M. Y., Kelly, C. E., Bakke, A. J., Cooper, K. W., ..., Hayes, J. E.. (2020) *Chemical Senses*
- [4] Coronaviruses and the chemical senses: past, present, and future
 Pellegrino, R., Cooper, K. W., Di Pizio, A., Joseph, P. V., Bhutani, S., and Parma, V. . (2020) *Chemical senses*
- [3] Medial entorhinal cortex activates in a traveling wave in the rat
 Hernandez-Perez, J. J., Cooper, K. W., Newman, E. L.. (2020) *eLife*
- [2] Can the Machine Understand: An Evidence Based Approach to the Chinese Room
 Cooper, K. W.. (2018) *IU Journal of Undergraduate Research*

THESIS

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

SELECTED ABSTRACTS + TALKS

- [16] Avalanche: an End-to-End Library for Continual Learning
 Cooper K.W., Lomonaco, V., Pellegrini, L., Carta, A., Cossu, A., Graffieti, G.. (2021) *ContinualAI Meetup*. None
- [15] Hippocampal theta oscillations support nonspatial sequence coding in hippocampal neurons
 Cooper, K. W., Shahbaba, B., Li, L., Agostinelli, F., Saraf, M., Elias, G. A., Bornstein, A., Baldi, P., Fortin, N. J.. (2021) *SFN Global Connectome*.
- [14] The neuroscience and AI feedback loop: Catastrophic Forgetting and Sequences
 Cooper K. W.. (2020) *UCI AGS Symposium*.
- [13] The Art of Email
 Cooper K. W.. (2020) *UCI GPS-STEM*.
- [12] Dual processes of hippocampal mode switching
 Cooper K. W.. (2020) *Neuromatch online Conference*.
- [11] Continual Learning: neuroscience + AI.
 Cooper K. W.. (2020) *Contiual AI Meetup*.
- [10] Cholinergic abolition disrupts encoding and retrieval mode switching
 Cooper K. W.. (2020) *11th Annual Emerging Scientists Symposium*.
- [9] The neuroscience amd AI feedback loop
 Cooper K. W.. (2019) *UCI Brain*.
- [8] On neuroscience and AI
 Cooper K. W.. (2019) *IUJUR Research Slam*.

- [7] Is theta a traveling wave in the medial entorhinal cortex?
Hernández J, Cooper K. W., Newman E.L.. (2018) Program No. 330.10. Society for Neuroscience.
- [6] Consequences of Catastrophic Forgetting on Semantic Representations Learned by Deep Neural Embedding Models
Cooper K. W, Dachapally P.R, Jones M.N. (2018) Midwest CogSci.
• *Best poster award*
- [5] Is theta in the Medial Entorhinal Cortex a Traveling Wave?
Cooper K. W., Hernández J, Newman E.L.. (2018) Society for Neuroscience, Greater Indiana Chapter.
- [4] 3D Brain Model Extraction and Virtual Applications
Cooper K. W.. (2018) (Panelist) Media School Graduate Association Conference.
- [3] FlapAI: Genetically Evolved Neural Networks
Cooper K. W.. (2018) Midwest Undergraduate Cognitive Science Conference.
- [2] Bridging the Gap: Natural Computation and Neural Systems
Cooper K. W.. (2017) Indiana University Undergraduate Research Conference.
- [1] Downstream Hippocampal Activity Prediction with Neural Networks
Cooper K. W., Osborn Z.. (2016) Midwest Undergraduate Cognitive Science Conference.

TEACHING

Autonomous Robotics	<i>Co-Instructor</i>	<i>Indiana Univ.</i>	<i>Sp 2019</i>
Programming in Cognitive Sciences	<i>Co-Instructor</i>	<i>Indiana Univ.</i>	<i>Sp 2018</i>
Mind, Memory, and the Brain	<i>Teaching Assistant</i>	<i>UC Irvine</i>	<i>Sp 2021</i>
Neurobiology and Behavior Laboratory	<i>Teaching Assistant</i>	<i>UC Irvine</i>	<i>Wt 2020</i>
Neurobiology and Behavior Laboratory	<i>Teaching Assistant</i>	<i>UC Irvine</i>	<i>Fa 2020</i>
Brain and Behavior	<i>Teaching Assistant</i>	<i>UC Irvine</i>	<i>Fa 2020</i>
Cognitive Psychology	<i>Teaching Assistant</i>	<i>Indiana Univ.</i>	<i>Fa 2018</i>
Introduction to Neuroscience	<i>Teaching Assistant</i>	<i>Indiana Univ.</i>	<i>Fa 2017</i>

NETWORKS

Cognitive Science Society	Society for Neuroscience
Indiana Academy of Science	Psi Chi
Sigma Xi	Sigma Alpha Pi
Continual AI (co-founder)	Carboncopies
AI for People	Internet Society
IU Student Org. for Cog Sci (President)	ADAPT Consulting (VP)

SCI COMM + OUTREACH	AskANeuroscientist	Founder; Live Q/A via in class video-chat (>400 students)	
	Hoosier STARS	Co-founder; K-12 class neuro demos (reached >300 students)	
	Quora Writer	Answers to neuroscience and AI questions (800k+ views)	
	CNLM Ambassadors	Co-chair; SoCal Learning and memory outreach	
	The Boys and Girls Club	Taught primary school aged students about the brain	
	IU Science Fest	Led a booth where people held and learned about sheep brains	
	Celebrate Science Indiana	Large scale outreach event, led an EEG and brain booth	
	Observatory Guide	Volunteer astronomical guide at the Kirkwood Observatory	
MENTORED STUDENTS	Chelsea Pan		
	Troy Good	now Amazon	
REFeree SERVICE	Physiological Reviews		
	Computer Vision and Pattern Recognition		
UNIVERSITY SERVICE	End Racism Initiative	University of California, Irvine	2020 -
	Education Policy Committee	Indiana University	2016 - 2017
	Faculty Council	Indiana University	2016 - 2017
TRAININGS + WORKSHOPS	FFASt Workshop on Scientific Leadership	UC Irvine	2021
	Certified Peer Reviewer Course	Elsevier	2020
	Computational Psychiatry Course	University of Zurich	2020
	The Meaning and History of the Constitution	Hillsdale College	2020
	Estes Cognitive Electrophysiology Workshop	University of Pennsylvania	2020
	NIH Grant Writing Workshop	UC Irvine	2020
	HHMI Productivity Workshop	UC Irvine	2020
	Nonlinear Dynamics: Math. and Comp. Approaches	Santa Fe Institute	2019
	Complexity Science	Santa Fe Institute	2018
	Science Communication Workshop	Indiana University	2017
	High Performance / Supercomputing Workshop	Indiana University	2017
	Aseptic Surgery: Proper Practice Training	Indiana University	2016
	Animal Handling and Animal Care Training	Indiana University	2016
	IUNI Network Science Workshop	Indiana University	2016
	First Aid and CPR Certified	American Red Cross	2014
	Pediatric Neurosurgery Shadowing	Riley Hospital	2014

OPEN
DATASETS

- [2] GCCR COVID-19 Questionnaire (2020) OSF
 - [1] Extracellular recordings from across the dorsoventral axis of the medial entorhinal cortex of the rat. hc-27 (2020) CRCNS
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ESSAYS

- [7] The Art of Email
Keiland Cooper. (February 18, 2020) GPS-STEM
 - [6] The Psychology of Risky Business
Keiland Cooper. (July 23, 2018) Medium
 - [5] Save Money, Close Deals, Clip Coupons: the Science of Decision Making
Keiland Cooper. (July 11, 2018) Medium
 - [4] The <Art> of Biting your Tongue
Keiland Cooper. (October 19, 2017) LinkedIn Publishing
 - [3] What Is Undergraduate Research And Why Is It Important?
Keiland Cooper. (September 7, 2017) We Are IU
 - [2] The Silent Battle for the Web May Change Everything as We Know It.
Keiland Cooper. (December 5, 2016) Medium
 - [1] The Whats and Whys of Schools App
Keiland Cooper. (August 5, 2015) We Are IU
-

PRESS

- [22] John Desmond (April 15, 2021) *Scientists Working on Continual Learning to Overcome Catastrophic Forgetting*. AI Trends
- [21] Kyle Wiggers (April 9, 2021) *AI Weekly: Continual learning offers a path toward more humanlike AI*. VentureBeat
- [20] Grace Hauck (January 31, 2021) *Millions of COVID-19 survivors have lost senses of smell and taste. Researchers don't know if they'll come back*. USA Today
- [19] Brooke Jarvis (January 28, 2021) *What Can Covid-19 Teach Us About the Mysteries of Smell?*. The New York Times Magazine
- [18] Misha Gajewski (December 9, 2020) *Is Losing Your Sense Of Smell And Taste The First Sign Of Covid-19? More Research Says Yes*. Forbs
- [17] Vincent Racaniello (October 18, 2020) *TWiV 673: Wake up and smell the pandemic*. This Week In Virology
- [16] Sara Harrison (August 5, 2020) *Many COVID-19 patients lost their sense of smell. Will they get it back?*. National Geographic
- [15] Bob Curley (July 7, 2020) *Lifestyle Changes You Can Make to Help Lower the 19 Risk Factors for Alzheimers*. Healthline
- [14] Salynn Boyles (July 6, 2020) *Majority of Patients with Mild Covid-19 Experience Altered Smell/Taste*. Physicians Weekly

- [13] Katie Boateng (June 15, 2020) *Episode 64 - An Interview with Some of the Authors*. The Smell Podcast
- [12] Leslie Kay (June 13, 2020) *Why COVID-19 Makes People Lose Their Sense of Smell*. Scientific American
- [11] John E Hayes, Valentina Parma (June 4, 2020) *COVID-19, smell and taste how is COVID-19 different from other respiratory diseases?* . The Conversation
- [10] Anthony Cusumano (February 2, 2020) *What a difference a decade makes..* Katalys Tech
- [9] Kevin Casey (September 30, 2019) *5 AI fears and how to address them..* The Enterprisers Project
- [8] Kevin Casey (September 17, 2019) *How to explain natural language processing (NLP) in plain English*. The Enterprisers Project
- [7] David Roe (August 27, 2019) *Is Augmented Artificial Intelligence Already Disrupting Artificial Intelligence?*. CMS Wire
- [6] Kristine Fellizar (August 7, 2019) *Why Is My Arm Asleep? 6 Reasons Your Limbs Go Numb When You're Sleeping*. Bustle
- [5] Lauren Wellbank (August 1, 2019) *Neuralink Update: How far off is Elon Musks high tech vision for our brains?*. Parentology
- [4] Tina Arnoldi (July 19, 2019) *Ready for Amazon to Read Human Emotions?*. Theravive
- [3] Ann Lewandowski (September 28th, 2018) *IU undergraduates practice science outreach at Indiana high schools*. IDS
- [2] Alexandra Moussa-Tooks (August 14, 2018) *The art of dissemination part 3: Care to share?*. SciU
- [1] Liz Rosdeitcher (2017) *Community Partnerships..* Psyugrad

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