
Profile

Computational cognitive scientist with expertise in user/behavior modeling, Bayesian statistics, categorization, and language modeling. I use theory and large-scale experiments from psychological sciences to build better machine learning models for recommendation and computer vision systems that behave more like people do.

Programming Experience

Languages: Python, C/C++/C#, MATLAB

ML Tools: tensorflow, scikit-learn, spaCy, opencv, pandas

Misc: linux, git, latex, mysql, mturk/php/html experiments

Education

- 2016 **Ph.D. in Psychology**, *University of California, Berkeley*.
Dissertation: *Statistical models of learning and using semantic representations*
Advisor: Thomas L. Griffiths
- 2010 **M.Phil in Computer Science (CSTIT)**, *University of Cambridge*.
Thesis: *Relevance feedback and novelty detection under the Bayesian Sets framework*
Advisor: Zoubin Ghahramani
- 2009 **B.A. (Honors) in Computer Science**, *New College of Florida*.
Thesis: *Temporal sequence analysis of Bottlenose dolphin vocalizations*
Advisor: Heidi H. Harley

Research Experience

- 2018–2020 **Postdoctoral Fellow**, *University of Melbourne*.
Complex Human Data Hub, PI: Charles Kemp
- 2017–2018 **Postdoctoral Fellow**, *Max Planck Institute for Human Development*.
Center for Adaptive Rationality, PI: Tim Pleskac
- 2010–2016 **Graduate Student Researcher**, *University of California, Berkeley*.
Computational Cognitive Science Lab, PI: Tom Griffiths
Language and Cognition Lab, PI: Terry Regier
Berkeley Artificial Intelligence Research (BAIR) Lab
- 2014 **Visiting Scholar**, *Brown University*.
Computational Cognitive Science Lab, PI: Joe Austerweil
- 2011 **Graduate Summer School**, *University of California, Los Angeles*.
Institute for Pure and Applied Mathematics (IPAM)
Probabilistic Models of Cognition: The Mathematics of Mind
- 2010 **Graduate Summer School**, *Sardinia, Italy*.
Machine Learning Summer School (MLSS)
Cognitive Science and Machine Learning
- 2009 **Research Assistant**, *Massachusetts Institute of Technology*.
Operations Research, PI: James Orlin

Journal Articles

- D.D. Bourgin, **J.T. Abbott**, and T.L. Griffiths. (in press). Recommendation as generalization: Using big data to evaluate cognitive models. *Journal of Experimental Psychology: General*.
- J.C. Peterson, **J.T. Abbott**, and T.L. Griffiths. (2018). Evaluating (and improving) the correspondence between deep neural networks and human representations. *Cognitive Science*. 42(8), 2648-2669.
- A.E. Skelton, G. Catchpole, **J.T. Abbott**, J.M. Bosten, and A. Franklin. (2017). Biological origins of color categorization. *Proceedings of the National Academy of Sciences*. 114(21), 5545-5550.
- **J.T. Abbott**, T.L. Griffiths, and T. Regier. (2016). Focal colors across languages are representative members of color categories. *Proceedings of the National Academy of Sciences*. 113(40), 11178-11183.
- T.L. Griffiths, **J.T. Abbott**, and A.S. Hsu. (2016). Exploring human cognition using large image databases. *Topics in Cognitive Science*. 8(3), 569-588.
- **J.T. Abbott**, J.L. Austerweil, and T.L. Griffiths. (2015). Random walks on semantic networks can resemble optimal foraging. *Psychological Review*. 122(3), 558-569.

Peer-reviewed Conference Proceedings

- **J.T. Abbott** and C. Kemp. (2020). Birds and Words: Exploring environmental influences on folk categorization. In *Proceedings of the 42nd Annual Conference of the Cognitive Science Society*.
- D.D. Bourgin, **J.T. Abbott**, and T.L. Griffiths. (2018). Recommendation as Generalization: Evaluating Cognitive Models In the Wild. In *Proceedings of the 40th Annual Conference of the Cognitive Science Society*.
- J.C. Peterson, **J.T. Abbott**, and T.L. Griffiths. (2017). Adapting deep network features to capture psychological representations: An abridged report. In *Proceedings of the 26th International Joint Conference on Artificial Intelligence*.
- J.C. Peterson, **J.T. Abbott**, and T.L. Griffiths. (2016). Adapting deep network features to capture psychological representations. In *Proceedings of the 38th Annual Conference of the Cognitive Science Society*. (Computational Modeling Prize in Perception and Action).
- D.D. Bourgin, **J.T. Abbott**, K.A. Smith, E. Vul, and T.L. Griffiths. (2014). Empirical evidence for Markov chain Monte Carlo in memory search. In *Proceedings of the 36th Annual Conference of the Cognitive Science Society*.
- Y. Jia, **J.T. Abbott**, J.L. Austerweil, T.L. Griffiths and T. Darrell. (2013). Visual concept learning: combining machine vision and Bayesian generalization on concept hierarchies. In *Advances in Neural Information Processing Systems 26*.
- **J.T. Abbott**, J.B. Hamrick, and T.L. Griffiths. (2013). Approximating Bayesian inference with a sparse distributed memory system. In *Proceedings of the 35th Annual Conference of the Cognitive Science Society*.
- **J.T. Abbott**, J.L. Austerweil, and T.L. Griffiths. (2012). Human memory search as a random walk in a semantic network. In *Advances in Neural Information Processing Systems 25*. (Spotlight Presentation).
- **J.T. Abbott**, T. Regier, and T.L. Griffiths. (2012). Predicting focal colors with a rational model of representativeness. In *Proceedings of the 34th Annual Conference of the Cognitive Science Society*.
- **J.T. Abbott**, J.L. Austerweil, and T.L. Griffiths. (2012). Constructing a hypothesis space from the Web for large-scale Bayesian word learning. In *Proceedings of the 34th Annual Conference of the Cognitive Science Society*.
- **J.T. Abbott**, K.A. Heller, Z. Ghahramani, and T.L. Griffiths. (2011). Testing a Bayesian measure of representativeness using a large image database. In *Advances in Neural Information Processing Systems 24*.
- **J.T. Abbott** and T.L. Griffiths. (2011). Exploring the influence of particle filter parameters on order effects in causal learning. In *Proceedings of the 33rd Annual Conference of the Cognitive Science Society*.
- **J.T. Abbott** and T. McGuire. (2008). Using graphs and games to generate cap set bounds. In *Congressus Numerantium*, Vol. 189.
- **J.T. Abbott**, P.Z. Chinn, T.J. Evans, and A.J. Stewart. (2007). Graph adjacency matrix automata. In *Congressus Numerantium* Vol. 188.

Workshop Proceedings and Technical Reports

- D.D. Bourgin, **J.T. Abbott**, and T.L. Griffiths. (2017). Towards More Human-Like Recommendations. In *Proceedings of the NIPS 2017 Workshop on Cognitively Informed Artificial Intelligence: Insights from Natural Intelligence*. (Spotlight Presentation).
- E. Grant, J.C. Peterson, **J.T. Abbott**, S. Levine, T.L. Griffiths, and T. Darrell. (2017). Concept acquisition via meta-learning: Few-shot learning from positive examples. In *Proceedings of the NIPS 2017 Workshop on Cognitively Informed Artificial Intelligence: Insights from Natural Intelligence*.
- J.C. Peterson, **J.T. Abbott**, and T.L. Griffiths. (2016). Adapting deep network features to capture psychological representations. 15th Neural Computation and Psychology Workshop. 38th Annual Conference of the Cognitive Science Society.
- Y. Jia, **J.T. Abbott**, J.L. Austerweil, T.L. Griffiths and T. Darrell. (2012). Visually-grounded Bayesian word learning. Technical Report UCB/EECS-2012-202. EECS Department, University of California, Berkeley.

Teaching Experience

- Fall 2019 **Co-Lecturer**, *Department of Psychological Sciences, University of Melbourne*.
CAPSTONE Seminar: Variation in word meanings across cultures
- Spring 2016 **Guest Lecturer**, *Department of Cognitive Science, UC Berkeley*.
Data Science and the Mind
- Fall 2015 **Guest Lecturer**, *Department of Cognitive Science, UC Berkeley*.
Data Science and Cognition
- Spring 2014 **Acting Graduate Instructor of Record**, *Department of Cognitive Science, UC Berkeley*.
Computational Models of Cognition
- Spring 2013 **Head Graduate Student Instructor**, *Department of Psychology, UC Berkeley*.
Computational Models of Cognition
- Spring 2011 **Graduate Student Instructor**, *Department of Cognitive Science, UC Berkeley*.
Computational Models of Cognition
- Fall 2008 **Teaching Assistant**, *Department of Natural Sciences, New College of Florida*.
Calculus I
- Spring 2008 **Teaching Assistant**, *Department of Natural Sciences, New College of Florida*.
Linear Algebra
- Fall 2007 **Teaching Assistant**, *Department of Natural Sciences, New College of Florida*.
Calculus I

Awards and Honors

- 2016 Cognitive Science Society Computational Modeling Prize in Perception and Action
- 2015 UC Berkeley Rosenzweig Departmental Fellowship
- 2012 Neural Information Processing Systems Conference Travel Award
- 2012 UC Berkeley Institute of Cognitive and Brain Sciences Research Grant
- 2011 Neural Information Processing Systems Conference Travel Award
- 2011 National Science Foundation Graduate Research Fellowship. *Honorable Mention*
- 2008 Barry M. Goldwater Scholarship

References

- Tom Griffiths
Professor of Psychology and Computer Science
Princeton University
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- Charles Kemp
Associate Professor of Psychological Sciences
University of Melbourne
`c.kemp@unimelb.edu.au`
- Terry Regier
Professor of Linguistics and Cognitive Science
University of California, Berkeley
`terry.regier@berkeley.edu`