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Employment

- 2015– *Assistant Professor, Dartmouth College*, Hanover, NH
Department of Psychological and Brain Sciences
- 2011–2015 *Postdoctoral Research Associate, Princeton University*, Princeton, NJ
Princeton Neuroscience Institute & Department of Computer Science
Advisors: Kenneth Norman, Ph.D. & David Blei, Ph.D.

Education

- 2011 Ph.D. in Neuroscience, **University of Pennsylvania**, Philadelphia, PA
Advisor: Michael Kahana, Ph.D.
Dissertation: *Acquisition, storage, and retrieval in digital and biological brains*
- 2006 B.S. in Neuroscience (High honors, *Magna cum laude*), **Brandeis University**, Waltham, MA
Advisor: Robert Sekuler, Ph.D.
Dissertation: *Modeling human spatial navigation using a degraded ideal navigator*
- 2006 B.S. in Computer Science (*Magna cum laude*), **Brandeis University**, Waltham, MA

Grants, honors, & awards

- 2016 EPSCoR Grant (NSF): The neural basis of attention
Award amount: \$6,000,000; Role: Investigator (PI: Peter Tse)
- 2010–2011 NIMH Ruth L. Kirshstein National Research Service Award for an Individual Predoctoral Fellowship: The neural representation of context and its role in free recall
Award amount: \$57,762; Role: PI
- 2008–2010 NIH Computational Neuroscience Training Grant
Role: Trainee
- 2006–2008 NIH Systems and Integrative Biology Training Grant
Role: Trainee

Publications & presentations

PEER-REVIEWED JOURNAL ARTICLES

- 2016 **Manning JR**, Hulbert JC, Williams J, Piloto L, Sahakyan L, Norman KA (2016) A neural signature of contextually mediated intentional forgetting. *Psychonomic Bulletin and Review*, 23(5): 1534–1542.

- 2014 Benson NC, **Manning JR**, Brainard DH (2014) Unsupervised learning of cone spectral classes from natural images. *PLoS Computational Biology*, 10(6): e1003652.
- Manning JR**, Ranganath R, Norman KA, Blei DM (2014) Topographic Factor Analysis: a Bayesian model for inferring brain networks from neural data. *PLoS One*, 9(5): e94914.
- Manning JR**, Lew TF, Li N, Kahana MJ, Sekuler RW (2014) MAGELLAN: a cognitive map-based model of human wayfinding. *Journal of Experimental Psychology: General*, 143(3): 1314 - 1330.
- 2012 **Manning JR**, Kahana MJ (2012) Interpreting semantic clustering effects in free recall. *Memory*, 20(5): 511 - 517.
- Manning JR**, Sperling MR, Sharan A, Rosenberg EA, Kahana MJ (2012) Spontaneously re-activated patterns in frontal and temporal lobe predict semantic clustering during memory search. *The Journal of Neuroscience*, 32(26): 8800 - 8816.
- 2011 **Manning JR**, Polyn SM, Baltuch G, Litt B, Kahana MJ (2011) Oscillatory patterns in temporal lobe reveal context reinstatement during memory search. *Proceedings of the National Academy of Sciences of the United States of America*, 108(31): 12893 - 12897.
- 2010 Jacobs J, **Manning JR**, Kahana MJ (2010) Response to Miller: “broadband” vs. “high gamma” electrocorticographic signals. *The Journal of Neuroscience*, 30(19): Online.
- 2009 **Manning JR**, Jacobs J, Fried I, Kahana MJ (2009) Broadband shifts in local field potential power spectra are correlated with single-neuron spiking in humans. *The Journal of Neuroscience*, 29(43): 13613 - 13620.
- Manning JR**, Brainard DH (2009) Optimal design of photoreceptor mosaics: why we do not see color at night. *Visual Neuroscience*, 26: 5-19.
- PEER-REVIEWED CONFERENCE PROCEEDINGS
- 2016 Anderson MJ, Capota M, Turek JS, Zhu X, Willke TL, Wang Y, Chen P-H, **Manning JR**, Rammadge PJ, Norman KA (2016) Enabling factor analysis on thousand-subject neuroimaging datasets. *IEEE Xplore, International Conference on Big Data (BigData 2016)*.
- 2014 **Manning JR**, Ranganath R, Keung W, Turk-Browne N, Cohen JD, Norman KA, Blei DM (2014) Hierarchical Topographic Factor Analysis. *IEEE Xplore, 4th International Workshop on Pattern Recognition in Neuroimaging*: 113 - 116.
- 2012 **Manning JR**, Gershman SJ, Norman KA, Blei DM (2012) Factor topographic latent source analysis: factor analysis for brain images. *Neural Information Processing Systems (NIPS) Workshop on Machine Learning and Interpretation in Neuroimaging, 2*: Online.

PREPRINTS

- 2017 Owen LLW, **Manning JR** (2017) Towards human Super EEG. bioRxiv: 121020.
- Manning JR**, Zhu X, Willke TL, Ranganath R, Stachenfeld KL, Hasson U, Blei DM, Norman KA (2017) A probabilistic approach to discovering dynamic full-brain functional connectivity patterns. bioRxiv: 106690.
- Heusser AC, Ziman K, Owen LW, **Manning JR** (2017) HyperTools: a Python toolbox for visualizing and manipulating high-dimensional data. arXiv: 1701.08290.
- 2016 Anderson MJ, Capota M, Turek JS, Zhu X, Willke TL, Chen P-H, **Manning JR**, Ramadge PJ, Norman KA (2016) Enabling Factor Analysis on Thousand-Subject Neuroimaging Datasets. arXiv: 608.04647.
- BOOK CHAPTERS
- 2014 **Manning JR**, Kahana MJ, Norman KA (2014) The role of context in memory. In Gazzaniga M, Ed. *The Cognitive Neurosciences, Fifth Edition*. Cambridge, MA: MIT Press. Chapter 47: 557 - 566.
- TALKS
- 2016 **Manning JR** (2016) The high-order dynamics of the world and our brains. fMRI Brown Bag talk series, Dartmouth College. Hanover, NH.
- Manning JR**, Li H, Liu Q (2016) The high-order brain dynamics (HOBD) model. *Society for Neuroscience Annual Meeting*. San Diego, CA.
- Manning JR** (2016) Efficient learning: what are the limits of human memory? *Cognitive Brown Bag talk series, Dartmouth College*. Hanover, NH.
- 2015 **Manning JR** (2015) Exploring dynamic brain connectivity patterns during story listening. *Center for Cognitive Neuroscience Retreat, Dartmouth College*. Fairlee, VT.
- Manning JR** (2015) A neural signature of mental time travel. Talk given at: *Columbia University*, New York, NY; *Brown University*, Providence, RI; *Dartmouth College*, Hanover, NH; *Georgetown University*, Washington, DC; and *Johns Hopkins University*, Baltimore, MD.
- 2014 **Manning JR**, Williams J, Piloto L, Hulbert JC, Abushanab B, Sahakyan L, Norman KA (2014) Neural evidence for a contextual change account of list-method directed forgetting. *Manhattan Area Memory Meeting (MAMM)*. New York, NY.
- Manning JR** (2014) Hierarchical Topographic Factor Analysis. *Pattern Recognition in Neuroimaging*. Tübingen, Germany.
- Manning JR**, Williams J, Piloto L, Hulbert JC, Abushanab B, Sahakyan L, Norman KA (2014) Neural evidence for a contextual change account of list-method directed forgetting. *Context and Episodic Memory Symposium*. Philadelphia, PA.

- Manning JR** (2014) The dark matter of memory search. *Dartmouth-Hitchcock Medical Center*. Lebanon, NH.
- 2013 **Manning JR** (2013) Topographic Factor Analysis: inferring brain networks from fMRI data. *Neuroimaging and Analysis Methods Seminar, Princeton University*. Princeton, NJ.
- Manning JR** (2013) Commentary on incorporating neural signals into computational models of memory search. *Context and Episodic Memory Symposium*. Philadelphia, PA.
- Manning JR** (2013) A neural signature of mental time travel. Talk given at: *University of Massachusetts*, Amherst, MA and *Dartmouth College*, Hanover, NH.
- 2012 **Manning JR** (2012) Decoding topic vectors from brain images. *Neuroimaging and Analysis Methods Seminar, Princeton University*. Princeton, NJ.
- Manning JR** (2012) Acquisition, storage, and retrieval in digital and biological brains. Talk given at: *Natick Soldier Systems Center* and *Charles River Analytics*. Natick, MA and Cambridge, MA.
- 2011 **Manning JR** (2011) Intracranial recordings yield novel insights into how episodic memories are represented, stored, and retrieved. *Society for Mathematical Psychology*. Boston, MA.
- Manning JR** (2011) Learning receptor types from receptor responses. *Systems and Integrative Biology Retreat, University of Pennsylvania*. Philadelphia, PA.
- Manning JR** (2011) Identifying neural signatures of conceptual representations and context reinstatement. *Neuroimaging and Analysis Methods Seminar, Princeton University*. Princeton, NJ.
- 2010 **Manning JR** (2010) A neural representation of temporal context. *Systems and Integrative Biology Retreat, University of Pennsylvania*. Philadelphia, PA.
- 2009 **Manning JR** (2009) The neural signature of mental time travel. *Neuroscience Graduate Group Student Retreat, University of Pennsylvania*. Philadelphia, PA.
- 2008 **Manning JR** (2008) Optimal design of photoreceptor mosaics: why we don't see in color at night. *Neuroscience Graduate Group Student Retreat, University of Pennsylvania*. Philadelphia, PA.
- POSTER PRESENTATIONS & PUBLISHED ABSTRACTS
- 2015 **Manning JR**, Zhu X, Cohen J, Ranganath R, Stachenfeld KL, Simony E, Regev M, Chen J, Hasson U, Willke TL, Blei DM, Norman KA (2015) Exploring connectivity patterns in storytelling data using Hierarchical Topographic Factor Analysis (HTFA). *Collaborative Research in Computational Neuroscience (CRCNS) Principal Investigators Meeting*. Seattle, WA.

- Stachenfeld KL, **Manning JR**, Ranganath R, Willke TL, Zhu X, Blei DM, Norman KA (2015) A probabilistic approach for exploring functional brain networks. *Society for Neuroscience*. Chicago, IL.
- 2014 **Manning JR**, Stachenfeld KL, Ranganath R, Turk-Browne N, Norman KA, Blei DM (2014) The Hierarchical Topographic Factor Analysis MATLAB Toolbox. *Collaborative Research in Computational Neuroscience (CRCNS) Principal Investigators Meeting*. Tempe, AZ.
- Manning JR**, Ranganath R, Norman KA, Blei DM (2014) Efficient discovery of functional brain networks in large multisubject fMRI datasets. *Society for Neuroscience*. Washington, DC.
- Manning JR**, Hulbert JC, Williams J, Piloto L, Sahakyan L, Norman KA (2014) Neural evidence for a context-change account of list-method directed forgetting. *Society for Neuroscience*. Washington, DC.
- Manning JR**, Ranganath R, Norman KA, Blei DM (2014) Hierarchical Topographic Factor Analysis: a MATLAB toolbox for efficiently discovering brain networks in fMRI data. *Context and Episodic Memory Symposium*. Philadelphia, PA.
- 2013 **Manning JR**, Blei DM, Norman KA (2013) Integrating neural and behavioral data into episodic memory models. *Society for Neuroscience*. San Diego, CA.
- Manning JR**, Blei DM, Norman KA (2013) A probabilistic temporal context model for tracking mental context using neural and behavioral data. *Collaborative Research in Computational Neuroscience (CRCNS) Principal Investigators Meeting*. Cambridge, MA.
- Manning JR**, Blei DM, Norman KA (2013) A probabilistic temporal context model for tracking mental context using neural and behavioral data. *Context and Episodic Memory Symposium*. Philadelphia, PA.
- 2012 **Manning JR**, Blei DM, Norman KA (2012) Decoding topic vectors during memory encoding and retrieval. *Society for Neuroscience*. New Orleans, LA.
- Manning JR**, Blei DM, Norman KA (2012) Text, neuroimaging, and memory: unified models of corpora and cognition. *Collaborative Research in Computational Neuroscience (CRCNS) Principal Investigators Meeting*. St. Louis, MO.
- Manning JR**, Blei DM, Norman KA (2012) Tracking item representations during free recall. *Context and Episodic Memory Symposium*. Bloomington, IN.
- 2011 **Manning JR**, Kahana MJ (2011) How does the brain represent and retrieve word meanings? *Collaborative Research in Computational Neuroscience (CRCNS) Principal Investigators Meeting*. Princeton, NJ.
- Gershman SJ, **Manning JR**, Blei DM, Norman KA (2011) New tools for decoding mental representations from neuroimaging data. *Collaborative Research in Computational Neuroscience (CRCNS) Principal Investigators Meeting*. Princeton, NJ.

Manning JR, Kahana MJ (2011) How does the brain represent and retrieve word meanings? *Society for Neuroscience*. Washington, DC.

Manning JR, Kahana MJ (2011) Temporal and frontal networks reveal how conceptual memories are organized. *Context and Episodic Memory Symposium*. Philadelphia, PA.

Manning JR, Hurst B, Brainard DH (2011) Learning receptor types from receptor responses. *Computational and Systems Neuroscience (COSYNE)*. Salt Lake City, UT.

2010 **Manning JR**, Polyn SM, Kahana MJ (2010) A neural signature of mental time travel. *Society for Neuroscience*. San Diego, CA.

Ramayya AG, **Manning JR**, Jacobs J, Kahana MJ (2010) The firing rate–LFP relation changes as a function of firing rate in humans. *Society for Neuroscience*. San Diego, CA.

Manning JR, Polyn SM, Kahana MJ (2010) Observing mental time travel in action: neurophysiological support for context-based models of episodic memory. *Context and Episodic Memory Symposium*. Philadelphia, PA.

2009 **Manning JR**, Polyn SM, Kahana MJ (2009) Neural correlates of context-based models of free recall. *Society for Neuroscience*. Chicago, IL.

Manning JR, Polyn SM, Kahana MJ (2009) The neural representation of context and its role in free recall. *Society for Mathematical Psychology*. Amsterdam, The Netherlands.

2008 **Manning JR**, Jacobs J, Fried I, Kahana MJ (2008) Broadband shifts in EEG power spectra are correlated with single-neuron activity in humans. *Society for Neuroscience*. Washington, DC.

Manning JR, Jacobs J, Fried I, Kahana MJ (2008) Broadband shifts in EEG power spectra are correlated with single-neuron activity in humans. *Society for Mathematical Psychology*. Washington, DC.

2007 **Manning JR**, Kahana MJ, Sekuler R (2007) An ideal navigator model of human wayfinding: learning one's way around a new town. *Cognitive Neuroscience Society*. New York, NY.

Manning JR, Brainard DH (2007) Why don't we see color at night? *Computational and Systems Neuroscience (COSYNE)*. Salt Lake City, UT.

Software

2017 Heusser AC, Ziman K, Owen LLW, **Manning JR** (2017) Hypertools. Plot and manipulate high-dimensional data (Python). [GitHub](#).

2016 **Manning JR** (2016) Hyperplot Tools. Plot and manipulate high-dimensional data (MATLAB). [MATLAB Central File Exchange: 56623](#).

- 2014 **Manning JR** (2014) Hierarchical Topographic Factor Analysis. [Efficiently discover functional brain networks in fMRI data.](#)
- 2013 **Manning JR** (2013) MATLAB Ipsum. Generate filler text using MATLAB. [MATLAB Central File Exchange: 43428.](#)
- Manning JR** (2013) Easy resample. Simple interface for interpolating or resampling a 1D signal. [MATLAB Central File Exchange: 43320.](#)
- 2012 **Manning JR** (2012) Chuck Close-ify. Automatically create artwork in Chuck Close's iconic style based on existing photographs. [MATLAB Central File Exchange: 38770.](#)
- Manning JR** (2012) Plot fMRI images. Quick and easy method for generating 2D and 3D brain plots. [MATLAB Central File Exchange: 36139.](#)
- Manning JR** (2012) Generate synthetic fMRI data. Generate synthetic data for testing fMRI analyses and models. [MATLAB Central File Exchange: 36125.](#)
- Manning JR** (2012) Sane pColor. Create 2D images that don't look blurry in OS X's Preview PDF viewer. [MATLAB Central File Exchange: 35601.](#)
- Manning JR** (2012) Attach. MATLAB implementation of the attach function in R. [MATLAB Central File Exchange: 35436.](#)
- Manning JR** (2012) Get tight subplot handles. Allows user to exert finer control over subplot spacing in MATLAB. [MATLAB Central File Exchange: 35435.](#)
- Manning JR** (2012) Slices. Efficiently slice a tensor along the n^{th} dimension. [MATLAB Central File Exchange: 35439.](#)

Teaching

DARTMOUTH COLLEGE

- 2017 *Co-organizer*, Methods in neuroscience at Dartmouth computational summer school: multi-scale network dynamics ([Website](#))
- 2016– *Instructor*, Laboratory in Psychological Science (PSYC 11)
Instructor, Human Memory (PSYC 51.09)
Guest Lecturer, Graduate Psychology Proseminar (PSYC 100.01)

Postdoctoral Advisees:

Andrew Heusser (2016–)

Graduate Advisees:

Lucy Owen (Doctoral Student; 2016–)

Tom Hao Chang (Masters student, Computer Science; co-advised with Qiang Liu; 2016–)

Hanli Li (Masters student, Computer Science; co-advised with Qiang Liu; 2016)

Thesis Committees:

Gina Notaro (Advisor: Solomon Diamond)

Luke Eglington (Advisor: Sean Kang)

Specialist Committees:

Feilong Ma (Advisor: James Haxby)

Youki Tanaka (Advisor: Matthijs van der Meer)

Undergraduate Advisees:

Paxton Fitzpatrick (2017–)

Marisol Tracy (2016–)

Campbell Field (2016–)

Madeline Lee (2016–)

Karina Lopez (2016–)

Wei Liang Samuel Ching (2016–)

Allison Frantz (2016–)

Aamuktha Porika (2016–)

Jake Rost (2016)

Clara Silvanic (2016)

Aman Agarwal (2016)

Joseph Finkelstein (2016)

Sheherzad Mohyidin (2016)

Peter Tran (2016)

Gal Perlman (2016)

Jessica Tin (2016)

PRINCETON UNIVERSITY

2012–2015 *Co-supervisor:*

Jeremy Cohen (undergraduate)

Luis Piloto (research assistant; now: graduate student, Princeton University)

Kimberly L. Stachenfeld (doctoral student; now: Google DeepMind)

Jamal Williams (research assistant; now: graduate student, Princeton University)

2013–2014 *Organizer*, Machine Learning Reading Group

UNIVERSITY OF PENNSYLVANIA

2009–2011 *Co-supervisor:*

Gaurav Bharaj (masters student)

Timothy Lew (undergraduate; now: graduate student, UCSD)

Ningcheng Li (masters student; now: Yale Medical School)

Andrew Spelman (undergraduate)

2011 *Instructor*, Computational Neuroscience (Summer course)

2010 *Instructor*, Computational Neuroscience (Summer course)

Guest lecturer, Human Memory (topic: Hopfield networks)

2009 *Co-instructor, Teaching assistant, Computational Neuroscience (Summer course)*
2008 *Teaching assistant, Introduction to Brain and Behavior*

BRANDEIS UNIVERSITY

2005–2006 *Computer Science Undergraduate Department Representative*
2005 *General teaching assistant, Programming in Java and C; Structure and Interpretation of Computer Programs; Internet and Society*

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