

## DEREK J. HUFFMAN, PH.D.

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### EDUCATION

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University of California, Irvine, 2010–2016

Ph.D., Neurobiology and Behavior

Advisor: Craig Stark, Ph.D.

*A functional, behavioral, and model-based investigation of human visual memory*

University of California, San Diego, 2008

B.S., Psychology, with emphasis in Cognitive Psychology

Minor: Chemistry

### RESEARCH EXPERIENCE

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University of California, Davis, 2018–

*NRSA Individual Postdoctoral Fellowship*

Department: Center for Neuroscience

Sponsors: Arne Ekstrom, Ph.D. and Charan Ranganath, Ph.D.

University of California, Davis, 2016–2018

*Postdoctoral Scholar*

Department: Center for Neuroscience

Advisor: Arne Ekstrom, Ph.D.

University of California, Irvine, 2010–2016

*Graduate Student Research Fellow*

Department: Neurobiology and Behavior

Advisor: Craig Stark, Ph.D.

University of Southern California, 2009–2010

*Research Assistant*

Advisor: Mara Mather, Ph.D.

University of California, San Diego, 2008

*Undergraduate Research Assistant*

Department: Psychology

Advisor: Adam Aron, Ph.D.

### GRANTS

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NRSA Individual Postdoctoral Fellowship, F32MH116577, 2018–2020

National Institute of Mental Health of the National Institutes of Health

Principal Investigator: Derek J. Huffman

*Determining the effects of encoding conditions on spatial representations in the human brain*

## AWARDS

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*Nominee for the Chancellor's Club Fund for Excellence*, 1 of 2 Ph.D. students nominated by the Francisco J. Ayala School of Biological Sciences, University of California, Irvine, 2014

*Best Poster Award*, given at the 19th Annual Meeting of the International Society for the History of the Neurosciences, Brussels, Belgium, 2014

*Ralph Waldo Gerard Prize for Excellence in the History of Neuroscience*, given by University of California, Irvine, 2014

*John W. Haycock Memorial Graduate Student Travel Award*, given by the Center for the Neurobiology of Learning and Memory at University of California, Irvine, 2013

## PEER-REVIEWED PUBLICATIONS

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Starrett, MJ, Stokes, JD, **Huffman, DJ**, Ferrer, E, and Ekstrom, AD (2018). Learning-dependent evolution of spatial representations for large-scale virtual environments. *Journal of Experimental Psychology: Learning, Memory, and Cognition*. <https://doi.org/10.1037/xlm0000597>

White, AO, Javier, LK, Goldberg, NR, Boucquey, V, Overman, J, Ochaba, J, Marsh, S, **Huffman, D**, and Nicholas, A (2017). Front and back flipping for neurobiology! Developing a hybrid upper-division lab course. *Journal of Undergraduate Neuroscience Education*, 16(1):A95-A101.

Ekstrom, A, **Huffman, DJ**, and Starrett, M (2017). Interacting networks of brain regions underlie human spatial navigation: A review and novel synthesis of the literature. *Journal of Neurophysiology*. <https://doi.org/10.1152/jn.00531.2017>

**Huffman, DJ** and Stark, CEL (2017). The influence of low-level stimulus features on the representation of contexts, items, and their mnemonic associations. *NeuroImage*, 155:513–529. <https://doi.org/10.1016/j.neuroimage.2017.04.019>

**Huffman, DJ** and Stark, CEL (2017). Age-related impairment on a forced-choice version of the Mnemonic Similarity Task. *Behavioral Neuroscience*, 131(1):55–67. <https://doi.org/10.1037/bne0000180>

Bennett, IJ, **Huffman, DJ**, and Stark, CEL (2015). Limbic tract integrity contributes to pattern separation performance across the lifespan. *Cerebral Cortex*, 25(9):2988-2999. <https://doi.org/10.1093/cercor/bhu093>

**Huffman, DJ** and Stark, CEL (2014). Multivariate pattern analysis of the human medial temporal lobe revealed representationally categorical cortex and representationally agnostic hippocampus. *Hippocampus*, 24(11):1394–1403. <https://doi.org/10.1002/hipo.22321>

Nashiro, K, Sakaki, M, **Huffman, D**, and Mather, M (2013). Both younger and older adults have difficulty updating emotional memories. *The Journal of Gerontology, Series B: Psychological Sciences and Social Sciences*, 68(2):224-227. <https://doi.org/10.1093/geronb/gbs039>

## PREPRINTS AND SUBMITTED MANUSCRIPTS

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**Huffman, DJ** and Ekstrom, AD (2018). Which way is the bookstore? A closer look at the judgments of relative directions task. *bioRxiv* <https://doi.org/10.1101/391326>

Boucquey, VK, Allen, TA, **Huffman, DJ**, Fortin, NJ, and Stark, CEL (under revision). A cross-species sequence memory task reveals hippocampus and medial prefrontal cortex activity and interactions in humans.

Stokes, J, Kyle, C, **Huffman, DJ**, and Ekstrom, AD (under revision). Integration of novel shape templates during human spatial navigation leads to prototype extraction.

## PUBLISHED ABSTRACTS AND CONFERENCE PRESENTATIONS

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**Huffman, DJ** and Ekstrom, AD (August 2018). The effect of body-based cues on human neural representations for space following active navigation in immersive virtual reality. Talk given at the Bay Area Memory Meeting (BAMM), Davis, CA.

**Huffman, DJ** and Ekstrom, AD (July 2018). The effect of body-based cues on human neural representations for space following active navigation in immersive virtual reality. Poster presented at the International Navigation Symposium, Mont-Tremblant, Québec, Canada.

**Huffman, DJ** and Ekstrom, AD (April 2018). An investigation of spatial representations in the human brain following active navigation in immersive virtual reality. Talk given at the UC Davis Postdoctoral Research Symposium.

**Huffman, DJ** and Ekstrom, AD (November 2017). The effect of body-based cues on human neural representations for space during active navigation. Poster presented at the Society for Neuroscience Annual Meeting, Washington, D.C.

**Huffman, DJ** and Stark, CEL (November 2016). Forced-choice and old/new test formats reveal a stable age-related impairment of performance on the Mnemonic Similarity Task. Poster presented at the Society for Neuroscience Annual Meeting, San Diego, CA.

**Huffman, DJ** and Stark, CEL (October 2015). Evidence for the representation of context in human parahippocampal cortex and retrosplenial cortex. Poster presented at the Society for Neuroscience Annual Meeting, Chicago, IL.

Boucquey, VK, Allen, TA, **Huffman, DJ**, Fortin, NJ, and Stark, CEL (October 2015). Hippocampus and medial prefrontal cortex show activity and functional connectivity during memory for sequences of events. Poster presented at the Society for Neuroscience Annual Meeting, Chicago, IL.

**Huffman, DJ** and Stark, CEL (April 2015). Evidence for the representation of context in human parahippocampal cortex. Center for the Neurobiology of Learning and Memory Annual Conference, University of California, Irvine.

Allen, TA, Boucquey, VK, Quirk, C, **Huffman, DJ**, Fortin, NJ, and Stark, CEL (January 2015). A hippocampal-prefrontal system underlies memory for sequences of events in rats and humans. Talk given by Tim Allen at the Park City Annual Winter Conference on the Neurobiology of Learning and Memory, Park City, UT.

**Huffman, DJ** (July 2014). Localization versus integration approaches to human neuroimaging since 1945. Poster presented at the Annual Meeting of the International Society for the History of the Neurosciences, Brussels, Belgium.

**Huffman, DJ** and Stark, CEL (November 2013). Multivariate pattern analysis of category representation in the human medial temporal lobe. Poster presented at the Society for Neuroscience Annual Meeting, San Diego, CA.

Bennett, IJ, **Huffman, DJ**, and Stark, CEL (November 2013). Integrity of limbic tracts contributes to episodic memory performance across the lifespan. Poster presented at the Society for Neuroscience Annual Meeting, San Diego, CA.

Stark, CE, **Huffman, DJ**, Stark, SM, and Yassa, MA (February 2013). Medial temporal lobe cortical thickness measurement using diffeomorphic registration in aging and mild cognitive impairment. Poster presented at the Annual Meeting of International Neuropsychological Society, Hawaii.

**Huffman, DJ** and Stark, CEL (January 2013). Multivariate investigation of category representation in the human temporal lobe. Talk given at the Park City Annual Winter Conference on the Neurobiology of Learning and Memory, Park City, UT.

**Huffman, DJ** and Stark, CEL (January 2013). Fornix integrity predicts behavioral pattern separation performance. Talk given by Craig Stark at the Park City Annual Winter Conference on the Neurobiology of Learning and Memory, Park City, UT.

**Huffman, DJ** and Stark, CEL (December 2012). Multivariate investigation of category representation in the human temporal lobe. Center for the Neurobiology of Learning and Memory Annual Conference, University of California, Irvine.

**Huffman, DJ** and Stark, CEL (October 2012). Multivariate investigation of domain specificity in human medial temporal lobe activity. Poster presented at the Society for Neuroscience Annual Meeting, New Orleans, LA.

## INVITED LECTURES AND PRESENTATIONS

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A functional, behavioral, and model-based investigation of human visual memory. (May 23, 2016: Doctoral Thesis Defense, Department of Neurobiology and Behavior, UC Irvine)

Investigation of representation in human parahippocampal cortex and retrosplenial cortex. (October 30, 2015: Center for Neuroscience, University of California, Davis)

Investigation of the effects of test format on performance of the Mnemonic Similarity Task. (December 3, 2014: Neuroblitz Seminar Series, UC Irvine)

Investigation of representation in the human medial temporal lobe. (April 18, 2014: Associated Graduate Student Symposium at UC Irvine)

Multivariate pattern analysis of category representation in the human medial temporal lobe. (January 22, 2014: Neuroblitz Seminar Series, UC Irvine)

A brief history of analytic approaches to human neuroimaging: from activation to connec-

tivity to multivariate pattern analysis. (January 16, 2014: Ceremony for the Ralph Waldo Gerard Prize for Excellence in the History of Neuroscience)

Multivariate pattern analysis of category representation in the human medial temporal lobe. (June 12, 2013: Ceremony for the John Haycock Memorial Graduate Student Travel Award)

Multivariate investigation of category representation in the human temporal lobe. (January 30, 2013: Neuroblitz Seminar Series, UC Irvine)

Multivariate investigation of category representation in the human medial temporal lobe. (October 12, 2012: Brain Mapping Colloquium Series, UC Irvine)

Multivariate investigation of category representation in the human medial temporal lobe. (May 30, 2012: Neuroblitz Seminar Series, UC Irvine)

Computational models in cognitive neuroscience: tools for studying multiple memory systems. (April 6, 2011: Neuroblitz Seminar Series, UC Irvine)

## TEACHING EXPERIENCE

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University of California, Davis, 2016–

*Mentor*

Duties: Supervised a research assistant that recently earned their bachelor's degree and an undergraduate research assistant as part of the Accelerating Success by Providing Intensive Research Experience (ASPIRE) program.

University of California, Irvine, Winter 2015, Winter 2017 (total: 2 Quarters)

*Invited Lecturer*

Biological Sciences N255: History of Neuroscience (upper division graduate course)

University of California, Irvine, Winter 2014, Winter 2016, Winter 2018 (total: 3 Quarters)

*Invited Lecturer*

Biological Sciences N119: History of Neuroscience (upper division undergraduate course)

University of California, Irvine, 2014–2015

*Mentor*

Duties: Supervised an Undergraduate Research Assistant, Jessica German, on a project for which she was awarded an Undergraduate Research Opportunities Program (UROP) Grant from UC Irvine. Provided scientific communications assistance for the student's project, including her poster presentation at the UROP Symposium. Her poster was selected by a panel of judges to be displayed in a prominent campus location.

University of California, Irvine, 2013–2014

*Laboratory Manual Editor*

Biological Sciences N113L: Neurobiology and Behavior Laboratory

University of California, Irvine, 2012–2014

*Laboratory Developer and Laboratory Manual Writer*

Biological Sciences N113L: Neurobiology and Behavior Laboratory

Duties: Developed and wrote laboratories with the assistance of one other graduate student.

These new laboratories are currently implemented in all sections of the course.

University of California, Irvine, 2012–2014 (total: 5 Quarters)

*Laboratory Leader*

Biological Sciences N113L: Neurobiology and Behavior Laboratory

Duties: Taught course material to graduate student instructors and ran them through all experiments (for 3 of 9 weeks). Assisted undergraduate students with experiments.

University of California, Irvine, Spring 2011, Winter 2012 (total: 2 Quarters)

*Graduate Student Instructor*

Biological Sciences N113L: Neurobiology and Behavior Laboratory

## ACADEMIC SERVICE

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Center for the Neurobiology of Learning and Memory, UC Irvine, 2012–2015

*School Tour Docent*

Duties: Led MRI exhibit for school tours for K–12 students with the aim of teaching them about the role of human neuroimaging techniques in modern neuroscience.

Center for the Neurobiology of Learning and Memory, UC Irvine, 2013–2014

*Coordinator of the Medial Temporal Lobe Journal Club* (now called “Hebb Club”)

Department of Neurobiology and Behavior, UC Irvine, 2012–2013

*Co-Coordinator of Neuroblitz Seminar Series*

Center for the Neurobiology of Learning and Memory, UC Irvine

*Volunteer for Events for CNLM Donors*

Evenings to Remember (Fall 2013)

A Memorable Evening (Fall 2011)

## COMPUTER PROGRAMMING

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*Data Analysis:* Python (since 2010), R (since 2010), Bash (since 2010)

*Experimental Design:* C# (Unity), GNU Octave, Psychtoolbox

*Typesetting:* L<sup>A</sup>T<sub>E</sub>X (since 2010)

*Operating Systems:* Debian-based GNU/Linux (since 2010), Mac OS (since 2009)

*Neuroimaging:* Certified MRI Operator (since 2010), AFNI (since 2010)

## NOTABLE ACHIEVEMENTS

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University of California, San Diego, 2006–2008

*Varsity Student Athlete: Men’s Crew*

Orange Coast College, 2005–2006

*Varsity Crew Captain*

Competed in collegiate rowing for four years. Elected “Varsity Team Captain” at OCC. Helped UCSD: win the Newport Autumn Rowing Festival, win the San Diego Crew Classic, and earn a ranking within the top 25 in the nation in the U.S. Rowing Collegiate Poll, all for the first time in program history.