

Daniel R. Coates, PhD

Nationality: U.S.

Date of Birth: 27/10/1972 (Minneapolis, MN, USA)

Gender: Male

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RESEARCH INTERESTS

I am broadly interested in visual perception, particularly mid-level processing and the underlying neural mechanisms. Using psychophysics and computational modeling, I study letter recognition in the fovea and periphery, with a special focus on the phenomenon of “crowding.”

EDUCATION

University of California, Berkeley

Ph.D., Vision Science

THESIS: Quantifying crowded and uncrowded letter recognition.

ADVISOR: Susana TL Chung, OD, PhD

Berkeley, CA

20/08/2009 - 15/05/2015

Portland State University

M.S., Computer Science, Adaptive Systems Track

THESIS: Modeling early vision: probabilistic computation using spiking

neurons, population codes, and CUDA. ADVISOR: Melanie Mitchell, PhD

Portland, OR

28/09/2007 - 12/12/2009

Macalester College

B.A. Mathematics, Computer Science, cum laude

St. Paul, MN

01/09/1990 - 12/08/1994

RESEARCH EXPERIENCE

Postdoctoral Researcher, Institute of Psychology

PI: Bilge Sayim. Psychophysics of Appearance Laboratory

University of Bern, Switzerland

1/8/2016 - present

Postdoctoral Fellow, Laboratory of Experimental Psychology

PI: Johan Wagemans. Support by Belgian American Educational Foundation

KU Leuven, Belgium

1/9/2015 - 1/7/2016

Graduate Research Assistant, UC Berkeley, Vision Science Group

PI: Susana Chung

Berkeley, CA

20/08/2010 - 15/5/2015

Graduate Research Assistant, Portland State ECE Department

PI: Dan Hammerstrom

Portland, OR

1/10/2008 - 1/5/2009

Intern, Los Alamos National Laboratory

NSF-sponsored intern working with PetaVision Group

Los Alamos, NM

1/6/2008 - 15/9/2008

ACADEMIC AWARDS AND HONORS

[Pegasus]² Marie Skłodowska-Curie Fellowship (declined)

FWO/MCSA, 2016-2018

Postdoctoral Fellowship

Belgian American Educational Foundation, 2015

Ezell Fellowship

American Optometric Foundation, 2013

ARVO Travel Fellowship

American Academy of Optometry, 2012

Outstanding Graduate Student Instructor Award

UC Berkeley, 2011-2012

Outstanding Graduate Student Instructor Award

UC Berkeley, 2010-2011

Phi Beta Kappa

Macalester College, 1994

Konhauser Prize in Mathematics

Macalester College, 1993

PUBLICATIONS

- Coates DR**, Wagemans J, Sayim B. Diagnosing the visual periphery: Using the Rey-Osterrieth Complex Figure Test to evaluate peripheral visual function. *i-Perception* (in press)
- Coates DR**, Chung STL. Crowding in the S-cone pathway. *Vision Research* April 8, 2016. doi:10.1016/j.visres.2016.03.007.
- Coates DR**, Chung STL. Changes across the psychometric function following perceptual learning of an RSVP reading task. *Frontiers in Psychology* (2014) Dec 23; 5:1434. doi: 10.3389/fpsyg.2014.01434
- Coates DR**, Levi DM. Contour interaction in foveal vision: A response to Siderov, Waugh, and Bedell (2013) *Vision Research* 96 (2014):140-144. doi: 10.1016/j.visres.2013.10.016
- Coates DR**, Chin JM, Chung STL. Factors affecting crowded acuity: eccentricity and contrast. *Optometry & Vision Science* (2013) Jul;90(7):628-38. doi: 10.1097/OPX.0b013e31829908a4

TEACHING EXPERIENCE AND MENTORSHIP

Guest Lecturer: Topics in Psychonomics

B-KUL-P0P75A, KU Leuven Psychology Master's Program, October 2015

Guest Lecturer: National Board Exam Topical Reviews (Topic: Color Vision)

OPT430C, UC Berkeley School of Optometry, 2010-2015 (invited lecture given each year)

Guest Lecturer: Visual Perception Sophomore Seminar (Topic: Color Vision)

VS84, UC Berkeley School of Optometry, 2013

Graduate Student Instructor and Guest Lecturer in Visual Perception and Sensitivity

VS205, UC Berkeley School of Optometry, 2009-2011

Summer Optometry Student Research Mentorship (NEI T35)

Stephanie Loftus (2013), Jeremy Chin (2012)

Graduate Teaching Assistant: Introduction to Operating Systems

CS333, Portland State University, Spring 2008

Graduate Teaching Assistant: Languages and Compiler Design I and II

CS321/CS322, Portland State University, Fall 2007/Winter 2008

PRESENTATIONS

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|---|----------------------------------|
| European Conference on Visual Perception (2016)
"Concordant effects of letter similarity in crowding and visual search." | Barcelona, Spain
Aug. 2016 |
| European Conference on Visual Perception (2015)
"Portraying the periphery: studying peripheral vision with drawing tasks" | Liverpool, UK
Aug. 2015 |
| Vision Sciences Society Annual Meeting (2014)
"A kindler, gentler adaptive psychophysical procedure" | St. Pete's Beach, FL
May 2014 |
| ARVO Annual Meeting (2014)
"Optimal stimulus placement for psychometric function estimation" | Orlando, FL
May 2014 |
| American Academy of Optometry Annual Meeting (2013)
"Acuity, contrast, eccentricity, and crowding"
"Characterizing alphabetic letter confusions" | Seattle, WA
Nov. 2013 |
| ARVO Annual Meeting (2012)
"Crowding in the S-cone pathway" | Ft. Lauderdale, FL
May 2012 |
| NIPS 2008, "Parallel Implementations of Learning Algorithms" Workshop
"A bird's-eye view of PetaVision, the world's first petaflop/s neural simulation" | Whistler, BC
Dec. 2008 |
| Systems Science Seminar, Portland State University
"What do we really understand about natural vision?" | Portland, OR
Oct. 2008 |

POSTER PRESENTATIONS

Vision Sciences Society Annual Meeting <i>“Acuity, contrast, eccentricity, and crowding”</i>	Naples, FL May 2013
Vision Sciences Society Annual Meeting <i>“Evaluation of a biologically inspired neural network for letter recognition”</i>	Naples, FL May 2012
Vision Sciences Society Annual Meeting <i>“Can positional averaging explain crowded letter confusions?”</i>	Naples, FL May 2011
American Academy of Optometry Annual Meeting <i>“A low-cost, flexible software platform for visual perception lab instruction”</i>	San Francisco, CA Nov. 2010
GPU Technology Conference 2009 <i>“Probabilistic visual computation with spiking neurons, population codes, and CUDA”</i>	San Jose, CA Oct. 2009

PROFESSIONAL SERVICE

- Session Moderator, ARVO Annual Meeting (2014)
- Journal Reviewer: *Optometry & Vision Science, Vision Research, Journal of Vision, Cognition, PLOS ONE, Perceptual and Motor Skills*
- Volunteer Coordinator, “Festschrift for Ralph Freeman,” November 2013
- Student Lead, UC Berkeley Vision Science Graduate Group, 2012-2013
- Journal Club Organizer: Crowding Journal Club, 2010-2014; Oxyopia Journal Club, 2010-2012

INDUSTRY HIGHLIGHTS: 1993-2006

- | | |
|---|--|
| Audio Precision
<i>DSP Engineer</i> | Beaverton, OR
<i>June 2004 - Jan. 2006</i> |
| New Sensor Corporation
<i>Software Engineer</i> | Long Island City, NY
<i>Nov. 2001 - June 2004</i> |
| • Manifold Labs, LLC
<i>Founder and Software Engineer</i> | New York, NY
<i>Mar. 2000 - July 2001</i> |
| Eventide
<i>Software Engineer</i> | Little Ferry, NJ
<i>June 1999 - Apr. 2001</i> |
- Developed audio signal processing algorithms in MATLAB, C/C++, and DSP assembly code.
 - Wrote embedded firmware in C/C++ and microcontroller assembly code.
 - Integrated Linux real-time kernel extensions for standalone audio processor prototype.
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| Eastman Software
<i>Software Developer</i> | New York, NY
<i>Jan. 1997 - May 1999</i> |
| • UCS, Inc.
<i>Software Developer</i> | Golden, CO
<i>Nov. 1994 - May 1996</i> |
- Wrote Windows software in C/C++ and Visual Basic for data collection and document workflow processing.
 - Designed automation object model, performed Y2K conversion, and debugged legacy system.
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| • Cray Research
<i>Software Intern</i> | Eagan, MN
<i>June 1993 - Dec. 1993</i> |
|--|---|
- Worked on front-end of C compiler. Added extension for floating-point hexadecimal constants.
 - Created assembly-level simulator for evaluation of numerical error.