

## Daniel R. Coates, PhD

Nationality: U.S.

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

Gender: Male

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Vlamingenstraat 116 bus 0101  
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### RESEARCH INTERESTS

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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.”

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### EDUCATION

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#### 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

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### RESEARCH EXPERIENCE

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#### Postdoctoral Fellow, Laboratory of Experimental Psychology

*PI: Johan Wagemans. Support: 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

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### ACADEMIC AWARDS AND HONORS

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#### 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

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PUBLICATIONS

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- 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

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TEACHING EXPERIENCE

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**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*

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PRESENTATIONS

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

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POSTER PRESENTATIONS

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|---|-----------------|
| <b>Vision Sciences Society Annual Meeting</b>         | Naples, FL      |
| <i>"Acuity, contrast, eccentricity, and crowding"</i> | <i>May 2013</i> |

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

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PROFESSIONAL SERVICE

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- Session Moderator, ARVO Annual Meeting (2014)
- Journal Reviewer: *Optometry & Vision Science*, *Vision Research*, *Journal of Vision*, *Cognition*, *PLOS ONE*
- 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

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INDUSTRY HIGHLIGHTS: 1993-2006

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|---|--|
| <b>Audio Precision</b><br><i>DSP Engineer</i>   | Beaverton, OR<br><i>June 2004 - Jan. 2006</i>        |
| <b>New Sensor Corporation</b><br><i>Software Engineer</i>   | Long Island City, NY<br><i>Nov. 2001 - June 2004</i> |
| <ul style="list-style-type: none"> <li>• <b>Manifold Labs, LLC</b><br/> <i>Founder and Software Engineer</i></li> </ul> | New York, NY<br><i>Mar. 2000 - July 2001</i>         |
| <b>Eventide</b><br><i>Software Engineer</i>   | Little Ferry, NJ<br><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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| <ul style="list-style-type: none"> <li>• <b>Eastman Software</b><br/> <i>Software Developer</i></li> </ul> | New York, NY<br><i>Jan. 1997 - May 1999</i> |
| <ul style="list-style-type: none"> <li>• <b>UCS, Inc.</b><br/> <i>Software Developer</i></li> </ul>        | Golden, CO<br><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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| <ul style="list-style-type: none"> <li>• <b>Cray Research</b><br/> <i>Software Intern</i></li> </ul> | Eagan, MN<br><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.