

RUYUAN ZHANG

Curriculum Vitae (Updated 02/28/16)

Contact

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Education

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| 2010-2016 | University of Rochester | Ph.D. , Brain & Cognitive Sciences (BCS)
Advisors: Dr. Duje Tadin and Dr. Daphne Bavelier |
| 2010 - 2014 | University of Rochester | M.A. , Brain & Cognitive Sciences |
| 2006 - 2010 | Peking University | B.A. , Psychology; Minor: Computer Science |

PhD Advisory Committee: Dr. Duje Tadin, Dr. Daphne Bavelier and Dr. Robert Jacobs (Chair)

PhD Thesis Committee: Dr. Duje Tadin, Dr. Daphne Bavelier, Dr. Brad Mahon, Dr. Zhonglin Lu (OSU), Dr. Krystel Huxlin (Chair)

Research Experience

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| 2016 - Present | Postdoctoral Research Associate (Advisor Dr. Kendrick Kay)
Center for Magnetic Resonance Research, Department of Radiology
University of Minnesota |
| 2010 - 2016 | Graduate student (Advisor Dr. Duje Tadin)
Department of Brain & Cognitive Sciences and Center of Visual Science,
University of Rochester |
| 2010 - 2016 | Graduate student (Advisor Dr. Daphne Bavelier)
Department of Brain & Cognitive Sciences and Center of Visual Science,
University of Rochester
FPSE, University of Geneva, Switzerland |

- 2007 - 2010 **Undergraduate Research Assistant (Advisor: Dr. Fang Fang)**
Vision and Brain Imaging Lab, Department of Psychology, Peking University
- 2008 - 2009 **Undergraduate Research Assistant (Advisor: Dr. Kan Zhang)**
Cognitive and Engineering Psychology Lab, Institute of Psychology, Chinese Academy of Sciences.

Awards and honors

- 2013 Student Travel Award for 12th Vision Sciences Society Annual Meeting
- 2010 Graduate Fellowship from Department of Brain & Cognitive Sciences, University of Rochester
- 2009 Undergraduate Research Fellowship from Institute of Psychology, Chinese Academy of Science
- 2009 Class Scholarship in Department of Psychology, Peking University
- 2008 Undergraduate Research Fellowship from Peking University
- 2008 GuangHua Undergraduate Scholarship, Peking University
- 2007 Class Scholarship in Department of Psychology, Peking University

Research Method and Skills

Research skills: Visual psychophysics, fMRI, computational modeling.
Research/Programming software: BrainVoyager, Matlab, Psychtoolbox, Freesurfer

Publications

- **Zhang, R.**, Martin, B., Jaeggi, Susanne., Lu, Z., & Bavelier, D. Action video game experience improves perceptual and cognitive learning.
- **Zhang, R**, Kwon, O.S & Tadin,D. (**=equally contributing authors). When learning impairs performance: divisive gain control explains adaptive learning of motion (in preparation).
- **Zhang, R** & Tadin,D. Complete transfer between component and pattern motion reveals learning induced plasticity in MT (in preparation).

- Nyquist J.B., Lappin J.S., **Zhang, R** & Tadin,D. Perceptual Training yields rapid improvements in visually impaired youth (in preparation).
- Cavanaugh M.R**, **Zhang, R****. Melnick M.D., Das.A., Roberts,M., Tadin,D., Carrasco,M., Huxlin,.K.R. (**=equally contributing authors). Visual recovery in cortical blindness is limited by high internal noise. *Journal of Vision*, 15(10), 9-9.
- V. R. Bejjanki**, **Zhang, R****, Li. R., Lu. Z., Pouget, A., Green, CS, & Bavelier, D. Action video game facilitates development of better perceptual template. (2014). (**=equally contributing authors, listed in alphabetical order). *Proceedings of the National Academy of Sciences*, 111(47), 16961-16966
- **Zhang, R****. Kwon, O.S**. & Tadin, D. Illusory motion of stationary stimuli in visual periphery: evidence for a strong centrifugal prior. (2013). (**=equally contributing authors). *Journal of Neuroscience*, 33, 4415-4423.

Ongoing Research Projects

- **Zhang, R.**, Yeatman, J., Kay,K., Bottom-up and top-down influences in word reading.
- **Zhang,R.**, Chen Q., Mahon,B. Decode motion processing in cortical blind patients.
- **Zhang, R**, Jaeggi, S.M., Buschkuhl, M., & Bavelier, D. Working memory and skill learning as a function of video game experience.

Kwon, O.S., **Zhang, R.**, & Tadin, D. Temporal evolution of motion direction judgments.

Conference Presentations

2016

- **Zhang, R.**, Tadin, D. (2016). The complete transfer of learning between component and pattern motion: psychophysical evidence for training-induced plasticity in MT. (Poster at Vision Sciences Society Annual Meeting 2016)

2015

- **Zhang, R.**, Kwon, O.S., & Tadin, D. (2015). Specificity and transfer of perceptual learning of motion. (Poster at Vision Sciences Society Annual Meeting 2015)
- Kwon, O.S., **Zhang, R.**, & Tadin, D. (2015). Temporal evolution of motion direction judgments. (Talk at Vision Sciences Society Annual Meeting 2015)

2014

- **Zhang, R.**, Jaeggi, S.M., Buschkuhl, M., & Bavelier, D. (2014). Working memory and skill learning as a function of video game experience. (**Poster** at Association for Psychological Science Convention 2014)
- Cavanaugh, M.R., Melnick, T.M., **Zhang, R.**, Roberts, M., Das, A., Tadin, D., Carrasco, M., & Huxlin, K.R., (2014). Residual inefficiencies of recovered vision in cortically blind fields – insights from the equivalent noise analysis. (**Poster** at Vision Sciences Society Annual Meeting 2014)
- Cavanaugh, M.R., Das, A., Melnick, T.M., **Zhang, R.**, Tadin, D., Carrasco, M., & Huxlin, K.R., (2014). Engineering the Eye IV Restoring Vision 29th Symposium. Center of Visual Science, University of Rochester. (**Poster** at 29th Center of Visual Science Symposium)

2013

- **Zhang, R.**, Green, S., Lu, Z., & Bavelier, D. (2013). Speeding up Learning: Action Video Games and Perceptual Learning. Journal of Vision, 13(9), 1089-1089. (**Talk** at Vision Sciences Society Annual Meeting 2013)

2012

- **Zhang****, **R.**, Kwon**, O.S., & Tadin, D. (2012) Illusory motion of stationary stimuli in visual periphery: evidence for a strong centrifugal prior. (**=equally contributing authors). Computational Foundations of Perception & Action 28th Symposium. Center of Visual Science, University of Rochester. (**Poster** at 28th Center of Visual Science Symposium)
- **Zhang, R.**, Bejjanki, V. R., Lu, Z., Green, S., Pouget, A., & Bavelier, D. (2012). Action Video Games playing improves learning to learn in perceptual learning. Journal of Vision, 12(9), 1130-1130. (**Poster** at Vision Sciences Society Annual Meeting 2012)

2011

- **Zhang, R.**, Li, R., Lu, Z., & Bavelier, D. (2011). Perceptual templates improvement through action video game playing and comparison to perceptual learning. i-Perception, 2(4), 269-269. (**Abstract** at Asia-Pacific Conference of Vision 2011)
- **Zhang, R.**, & Tadin, D. (2011). Illusory centrifugal motion direction observed in brief stimuli: psychophysics and energy model. i-Perception, 2(4), 389-389. (**Abstract** at Asia-Pacific Conference of Vision 2011)
- **Zhang, R.**, & Tadin, D. (2011). Illusory centrifugal motion direction observed in stationary stimuli: Dependency on duration and eccentricity. Journal of Vision, 11(11), 769-769. (**Poster** at Vision Sciences Society Annual Meeting 2011)

2009

- **Zhang, R.** & Fang, F. (2009). Top-down influence on invisible face to gain access to awareness during continuous flash suppression (poster presentation). Workshop on Cognitive Science: From Cellular Mechanisms to Computational Theories (CS-2009), May, 2009, Beijing, China. (**Poster** at Beijing International Cognitive Science Workshop)

Computational Methods Courses

Peking University, Computer Science

Introduction to Computer Science

Data Structure and Algorithm

Tsinghua University, Computer Science

Computational Neuroscience	Instructor: Dr. Zhaoping Li	Audit
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University of Rochester, Brain & Cognitive Sciences (BCS)

Computational Neuroscience	Instructor: Dr. Alex Pouget	Grade: A
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Computational Methods in Cognitive Science	Instructor: Dr. Robert Jacobs	Grade: A
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Computational Neuroscience (Spring 2015)	Instructor: Dr. Ralf Haefner	Audit
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Online Courses

Computational Neuroscience (Coursera)	Instructor: Dr. Rajesh P.N. Rao and Dr. Adrienne Fairhall
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Machine Learning (Coursera)	Instructor: Dr. Andrew Ng
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Statistical Analysis of fMRI Data (Coursera)	Instructor: Dr. Martin Lindquist
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Introduction to Statistics: Descriptive, Probability and Inference (Edx)	Instructor: Dr. Ani Adhikari
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Ongoing and planned courses

Probabilistic Graphical Models (Coursera)	Instructor: Dr. Daphne Koller
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Neural Networks for Machine Learning (Coursera)	Instructor: Dr. Geoffery Hinton
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An Introduction to Interactive Programming in Python (Coursera)	
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Journal Review

Frontiers in System Neuroscience (Ad Hoc)

Talks

2016 Talk, the School of Psychology, South China Normal University, Guangzhou, China

- 2016 Talk, Neuro-Cognitive Research Center, South University of Science and Technology of China
- 2016 Talk, Department of Psychology, Zhejiang University, Hangzhou, China.
- 2016 Talk, Department of Psychology, the School of Education, Suchow University, Suchow, China.
- 2016 Talk, Institute of Cognitive Neuroscience, the School of Psychology and Cognitive Science, East China Normal University, Shanghai, China.
- 2015 Talk, National Institute of Health, Laboratory of Dr. Biyu He
- 2015 Talk, University of California, Berkeley, Laboratory of Dr. Jack Gallant
- 2015 Talk, Center of Visual Science, University of Rochester
- 2014 Graduate student lunch talk, Department of Brain& Cognitive Sciences, University of Rochester
- 2013 Graduate student lunch talk, Department of Brain& Cognitive Sciences, University of Rochester

Teaching

University of Rochester

- 2015 Instructor for graduate course *Special Topic in Vision* (BCS)
- 2014 Teaching assistant for undergraduate course *Foundation of Cognitive Sciences* (BCS111)
- 2013 Teaching assistant for undergraduate course *Foundation of Cognitive Sciences* (BCS111)
- 2011 Teaching assistant for undergraduate course *Perception & Action* (BCS151)

Peking University

- 2009 Teaching assistant for undergraduate course *Central Neuro System*
- 2010 Teaching assistant for undergraduate course *Cognitive Neuroscience*

Professional Membership (Past and Present)

Vision Sciences Society (2010-present)

Association for Psychological Science (2014-2015)

Other research-related activities

2015	Participant, University of Rochester Deep Learning Reading Group
2014-2016	Organizer and participant, Center for Visual Science journal club
2015	Student host for Prof. Christopher Baker, Boynton Colloquium Series Lecture, Center of Visual Science
2014	Student host for Prof. Sheng He, Boynton Colloquium Series Lecture, Center of Visual Science
2012	Student host for Prof. Takeo Watanabe, Boynton Colloquium Series Lecture, Center of Visual Science