

# CURRICULUM VITAE

SHIH-WEI WU 吳仕煒

Nationality: Taiwan  
Date of Birth: August 30, 1977

## ADDRESS

Institute of Neuroscience, National Yang-Ming University  
No. 155, Sec. 2, Linong St., Taipei 112, Taiwan  
Tel: 886-2-28267144  
Email: swwu@ym.edu.tw  
URL: <http://ins.web.ym.edu.tw/front/bin/ptdetail.phtml?Part=20100910sww-1&Category=18>

## EDUCATION

2003-2008, New York University, New York, USA  
PhD in Experimental Psychology, Cognition and Perception program

1995-1999, National Cheng-Chi University, Taipei, Taiwan  
BS in Psychology

## POSITIONS

Starting Aug. 2015 – Associate professor  
Institute of Neuroscience, National Yang-Ming University, Taiwan

Aug. 2010 – July 2015, Assistant professor  
Institute of Neuroscience, National Yang-Ming University, Taiwan

Sept. 2008 – May 2010, Postdoctoral fellow  
Division of Humanities and Social Sciences, California Institute of Technology,  
Pasadena, USA

## RESEARCH INTERESTS

Neuroeconomics, decision making, sensorimotor control, perception and action, statistical and computational modeling, functional magnetic resonance imaging

## PROFESSIONAL SOCIETIES

Vision Sciences Society, Society for Neuroscience, Society for Neuroeconomics

## PROFESSIONAL ACTIVITIES, HONORS, AND SERVICES

2011-present: Executive board, Taiwan Mind and Brain Imaging Center, Ministry of Science and Technology, Taiwan.

2008: UCLA advanced neuroimaging summer school and Mathematics in Brain Imaging workshop, University of California, Los Angeles, USA

2006: Stanford neuroeconomics summer school, Stanford University, California, USA

2005: Travel grant, Graduate school of Arts and Sciences, New York University, New York, USA

2003-2008: McCracken Doctoral Fellowship, New York University, New York, USA

## GRANTS

Neural mechanisms for reference-dependent value computations, NTD 3,941,000, Ministry of Science and Technology, MOST 104-2410-H-010-002-MY3, 2015-2018.

The neurobiology of decision-making: How prior experience, environmental uncertainty, and rewards affect how the brain makes decisions, NTD 5,203,000, National Science Council, NSC 101-2628-H-010-001-MY4, 2012-2016 (category: research grant for excellent young investigator).

Neural mechanisms for integrative value computation, NTD 2,178,000, National Science Council, NSC 99-2410-H-010-013-MY2, 2010-2012.

## PUBLICATIONS

Wu, S-W., Glimcher, P.W. (in press). The emerging standard neurobiological model of decision making: Strengths, weaknesses, and future directions. *Handbook on Computational Economics and Finance*. Oxford University Press.

Wu, S-W., Delgado, M.R., Maloney, L.T. (2015). Gambling on visual performance: Neural correlates of metacognitive choice between visual lotteries. *Frontiers in Neuroscience*, 9:314. doi: 10.3389/fnins.2015.00314.

Yu, J., Tseng, P., Hung, D.L., Wu, S-W., Juan, C-H. (2015). Brain stimulation improves cognitive control by modulating medial-frontal activity and preSMA-vmPFC functional connectivity. *Human Brain Mapping*. doi: 10.1002/hbm.22893.

Ting, C-C., Yu, C-C., Maloney, L.T., Wu, S-W. (2015). Neural mechanisms for integrating prior knowledge and likelihood in value-based probabilistic inference. *Journal of Neuroscience*, 35:1792-1805.

Wu, S-W., Delgado, M.R., & Maloney, L.T. (2015). Motor decision-making. In: Arthur W. Toga, editor. *Brain Mapping: An Encyclopedic Reference*, vol. 3, pp. 417-427. Academic Press: Elsevier.

Wu, S-W., Delgado, M. R., & Maloney, L. T. (2011). The neural correlates of the subjective utility of monetary outcome and probability weight in economic and in motor decision under risk. *Journal of Neuroscience*. 31(24), 8822-8831.

Zhang, H., Wu, S-W., & Maloney, L. T. (2010). Planning multiple movements within a fixed time limit: The cost of constrained time allocation in a visuo-motor task. *Journal of Vision*, 10(6), 1-

17.

- Wu, S-W., Dal Martello, M. F., & Maloney, L. T. (2009b). Suboptimal allocation of time in sequential movements. *PLoS ONE* 4(12): e8228. doi:10.1371/journal.pone.0008228.
- Wu, S-W., Delgado, M. R., & Maloney, L. T. (2009a). Economic decision-making compared with an equivalent motor task. *Proceedings of the National Academy of Sciences USA*, 106, 6088-6093.
- Dean, M., Wu, S-W., Maloney, L. T. (2007). Trading off speed and accuracy in rapid, goal directed movements. *Journal of Vision*, 7(5), 1-12.
- Wu, S-W., Trommershauser, J., Maloney, L. T., Landy, M. S. (2006). Limits to human movement planning in tasks with asymmetric gain landscapes. *Journal of Vision*, 6(1), 53-63.

### **MANUSCRIPTS UNDER REVIEW**

- Wang, T-Y., Lee, S-C., Wu, S-W. (under review). The shape and dynamics of probability distortion in experience-based decisions: when probability is learned independently of outcomes.

### **MANUSCRIPTS IN PREPARATION**

- Soltani, A., Liu, Y-H., Wu, S-W. When time is money: Dynamic integration of sensory evidence and diminishing reward in perceptual decision making.
- Wu, S-W., Shimojo, S., O'Doherty, J., Rangel, A. Dissociable but interacting roles of VMPFC and IPS in sequential value-based decision-making.
- Wu, S-W., Glimcher, P. W., Shimojo, S., O'Doherty, J., Rangel, A. Evidence for reference-dependent value computations in ventromedial prefrontal cortex during risky choice.
- Wu, S-W., Shimojo, S., O'Doherty, J., Rangel, A. Neural mechanisms for sequential value integration in the parietal cortex.

### **CONFERENCE ABSTRACTS**

- Yeh, M-J., Wu, S-W. (2014). Using knowledge about perceptual performance to make value-based decisions. Cognitive Neuroscience Society. Boston, Massachusetts, USA.
- Lin, W-H., Wu, S-W. (2013). Absolute or relative? Neural coding of reward probability in the ventromedial prefrontal cortex. Society for Neuroscience. San Diego, California, USA.
- Ting, C-C., Wu, S-W. (2013). The medial prefrontal cortex integrates prior knowledge and current sensory evidence in a value-based decision task. Society for Neuroscience meeting, San Diego, California, USA.
- Liu, Y-H., Wu, S-W. (2013). Distortion of proportion estimation in sensory judgment. Cognitive Neuroscience Society meeting, San Francisco, California, USA.
- Wang, T-Y., Wu, S-W. (2013). The dynamics of probability distortion in decision under risk. Cognitive Neuroscience Society meeting, San Francisco, California, USA.
- Yu, C., Maloney, L. T., Wu, S-W. (2012). Near-optimal Bayesian integration in judgments under risk. Society for Neuroscience, New Orleans, Louisiana, USA.

- Liu, Y-H., Wu, S-W. (2012). Integration of dynamic reward schedules and speed-accuracy tradeoff in perceptual decision making. Vision Sciences Society, Naples, Florida, USA.
- Wang, T-Y., Wu, S-W. (2012). Visual feedback-related probability learning and its contributions to decision from experience. Vision Sciences Society, Naples, Florida, USA.
- Wu, S-W., Delgado, M. R., Maloney, L. T. (2011). The neural correlates of probability distortion in perceptual and in economic decision under risk. Society for Neuroscience. Washington DC, Maryland, USA
- Wu, S-W., Shimojo, S., O'Doherty, J. P., Glimcher P. W., Rangel, A. (2010). A fronto-parietal system for dynamic value computation during decision-making. Society for Neuroscience, San Diego, California, USA.
- Wu, S-W., Shimojo, S., O'Doherty, J. P., Rangel, A. (2009). Dynamical Bayesian computations of decision value in vmPFC. Society for Neuroscience, Chicago, Illinois, USA.
- Wu, S-W., Delgado, M. R. Maloney, L. T. (2008). Neural correlates of value and probability in decision under risk and in an equivalent motor task. Society for Neuroscience, Washington DC, Maryland, USA.
- Wu, S-W., Maloney, L. T. (2008). Neural correlates of value and probability in decision under risk and in an equivalent motor task. Computational and Systems Neuroscience, Salt Lake City, Utah, USA.
- Wu, S-W., Dal Martello, M. F., Maloney, L. T. (2007). Performance in rapid, sequential visually-guided pointing movements. Vision Sciences Society, Sarasota, Florida, Abstract: Journal of Vision, 7(6), 167a.
- Wu, S-W., Dal Martello, M. F., Maloney, L. T. (2006). Trajectory planning in sequential movements. Workshop: Bridging the gap between sensation and motor control: from computation to behavior, Rauischoizhausen, Germany, July, 2006.
- Wu, S-W., Dean, M., Maloney, L. T. (2006). Humans trade off speed and accuracy to maximize expected gain in planning movements to targets that rapidly decreases in reward across time. Vision Sciences Society, Sarasota, Florida, Abstract: Journal of Vision, 6(6), 927a.
- Maloney, L. T., Wu, S-W., Dal Martello, M. F. (2006). Movement planning under risk differs from decision making under risk in how subjects make use of probability information. Vision Sciences Society, Sarasota, Florida, Abstract: Journal of Vision, 6(6), 928a.
- Wu, S-W., Maloney, L. T., Dal Martello, M. F. (2005). Planning sequences of arm-hand movements to maximize expected gain. European conference on Visual Perception, A Coruna, Spain, Abstract: Perception (Supplement), 34, 23.
- Wu, S-W., Maloney, L. T., Dal Martello, M. F. (2005). Movement Planning in rapid 'foraging' task: Maximization of expected value in strategy selection? Vision Sciences Society, Florida, Abstract: Journal of Vision, 5(8), 125a.
- Wu, S-W., Trommershauser, J., Maloney, L. T., Landy, M. S. (2004). Planning rapid movements to maximize gains in scenes with multiple regions carrying reward or penalty. Vision Sciences Society, Florida, Abstract: Journal of Vision, 4(8), 145a.

## **INVITED TALKS**

### 2015

July 23. Perception, action, and statistical decision theory. Shanghai Neuroeconomics Collective Summer School.

July 21. Weighting the past and the present: Neural computations for probabilistic inference about rewards. Institute of Neuroscience, Shanghai Institutes for Biological Sciences, Chinese Academy of Science, China.

April 23. Weighting the past and the past: Neural computations for probabilistic inference about rewards. Center for Neural Science, New York University.

March 16. Neural mechanisms for reward-related probabilistic inference. Department of Economic, University of Zurich.

### 2014

December 12. Neural mechanisms for Bayesian integration in value-based probabilistic inference. Workshop on Information and Neural Decision Sciences. National Cheng-Chi University, Taipei, Taiwan.

November 14. Integrating the past and present: Neural mechanisms for Bayesian integration in value-based probabilistic inference. Department of Psychological and Brain Sciences, Dartmouth College, USA

October 17. Decision making and the brain. Department of Electrical Engineering, National Tsing Hua University, Hsinchu, Taiwan.

September 13. Decision making and the brain. Taiwan Cognitive Neuroscience Summer School, National Central University, Jhongli, Taiwan.

August 31. Value-based decision making in fronto-parietal circuits. Society of Clinical Neurophysiology Annual Meeting, Tai-chung, Taiwan.

July 2. Gambling on your perceptual abilities: The tradeoff between sensory uncertainty and subjective value of rewards in economic choice. Symposium on Neuroscience and Behavioral Economics, National Yang-Ming University, Taipei, Taiwan.

February 22. Dissociable but interactive neural systems for updating and choice computations in sequential decision making. Symposium on Brain and Mind Sciences, College of Medicine, National Taiwan University, Taipei, Taiwan.

January 18. The neurobiology of decision-making under uncertainty. Taiwan Society of Cognitive Neuroscience Annual Meeting, National Central University, Jhongli, Taiwan.

### 2013

December 5. Characterizing choice and neural computations in the framework of statistical decision theory. Mini Symposium on Human Perception and Decision Making. RIKEN Brain Science Institute, Japan.

July 25. Understanding neural mechanisms for updating computations in the context of Bayesian decision theory. Symposium on decision making and neural computation. Taiwan Mind and Brain Imaging Center, National Cheng-Chi University, Taipei, Taiwan.

2012

September 22. Integrating the past and the present: Neural mechanisms for updating computations under uncertainty. Annual Meeting of the Taiwan Neuroscience Society, Taipei, Taiwan.

July 5. fMRI applications in cognitive neuroscience. Summer school in cognitive neuroscience, Taipei, Taiwan.

Jan 3. Neuroeconomics: past, present, controversy. Institute of Economics, Academia Sinica, Taipei, Taiwan.

2011

December 2. The neural correlates decision under risk. Neuroscience Club Special Seminar, National Tsing Hua University, Hsinchu, Taiwan.

Aug 31. The neural correlates of probability in economic, motor, and perceptual decision under risk. Cross-strait joint symposium on social cognitive neuroscience.

Research Center on Mind, Brain, and Learning; Department of Psychology, National Cheng-Chi University, Taipei, Taiwan.

July 6. The emergence of a neuroeconomic treatment in the study of choice behavior. Summer school in cognitive neuroscience, Taipei, Taiwan.

March 24. The representation and updating of probability information in decision under risk. Microeconomics seminar, Department of Economics, National Taiwan University, Taipei, Taiwan.

2010

October 21. Integrating the past and present: Neural mechanisms for dynamic value computations during decision-making. Department of Psychology, National Chengchi University, Taipei, Taiwan.

Neural computation of probability in decision under risk. 2010 Frontiers in Neuroscience: From genes to cognition symposium, Taipei, Taiwan.

Neural computation of probability in decision under risk. Department of Psychology, National Cheng Kung University, Tainan, Taiwan.

Neural computation of risk, beliefs, and information updating. Neuromorphic Engineering Student Society, California Institute of Technology, Pasadena, USA.

Computational mechanisms for representing and updating beliefs during decision making. Institute of Neuroscience, National Yang-Ming University, Taipei, Taiwan.

Economic decision-making compared with an equivalent motor task. Department of Psychology, National Taiwan University, Taipei, Taiwan.

The neural correlates of value and probability in decision making under risk and in an equivalent motor task. Vision Sciences Society, Naples, Florida, USA.

2008

The economics of movement planning and its connection to decision making under risk. Center for Mind, Brain, and Learning, National Cheng-Chi University, Taipei, Taiwan.

The economics of movement planning and its connection to decision making under risk. Division of the Humanities and Social Sciences, California Institute of Technology, Pasadena, USA.