
BIOGRAPHICAL SKETCH

NAME Tong, Frank	POSITION TITLE Professor of Psychology
eRA COMMONS USER NAME (credential, e.g., agency login) FRANKTONG	

EDUCATION/TRAINING			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
Queen's University, Kingston, Ontario, Canada	B.S.	05/95	Psychology
Harvard University, Cambridge, MA	Ph.D.	09/99	Experimental Psychology
University of California, Los Angeles, CA	Postdoctoral	09/99-08/00	Cognitive Neuroscience

A. Personal Statement

I am a leading expert in behavioral, computational, and neuroimaging methods to characterize the bases of human visual perception, object recognition, attention, and memory. My lab on advanced computational approaches for data analysis and computational modeling. For example, we pioneered the application of machine learning techniques to analyze fMRI data, we apply Bayesian model comparison to evaluate competing cognitive models, and we are now developing deep learning networks to compare human and machine performance at challenging visual tasks. My research contributions have been recognized by awards from the Vision Sciences Society, Cognitive Neuroscience Society, and the National Academy of Sciences. As PI, I am experienced at guiding the lab and providing high quality training experiences, with 8 former trainees who are tenure-track or tenured faculty members at universities around the world. I am dedicated to advancing the study of visual perceptual and cognition, and served as an elected board member of the Vision Sciences Society from 2012-2016.

B. Positions and Honors

Positions and Employment

- 1999 – 2000 McDonnell-Pew Postdoctoral Research Fellow, Department of Psychology, University of California, Los Angeles, CA
- 2000 – 2004 Assistant Professor, Department of Psychology, Princeton University, NJ
- 2004 – 2007 Assistant Professor, Department of Psychology, Vanderbilt University, Nashville, TN
- 2007 Fall Visiting Scholar, Department of Psychology, Harvard University, Cambridge, MA
- 2007 – 2012 Associate Professor, Department of Psychology, Vanderbilt University, Nashville, TN
- 2012 – Professor, Department of Psychology, Vanderbilt University, Nashville, TN

Other Experience and Professional Memberships

- 2000–present Member of Association for Psychological Science, Cognitive Neuroscience Society, Human Brain Mapping Organization, Society for Neuroscience, Vision Sciences Society
- 2011 Member of NEI Program Planning Panel for Strabismus, Amblyopia, & Visual Processing
- 2012 Ad-hoc member of Sensory, Perceptual, and Cognitive Processes Study Section (SPC), NIH
- 2015, 2016 Ad-hoc member of Sensory, Perceptual, and Cognitive Processes Study Section (SPC), NIH
- 2012 – 2016 Board member, Vision Sciences Society
- 2014 – 2018 Editorial committee member, Annual Review of Psychology
- 2016 – Academic editor, PLOS Biology

Honors and Awards

1990 – 1995	Full undergraduate scholarship and stipend, Queen's University, Canada
1995	Medal in Psychology for highest graduating GPA, Queen's University
1995 – 1997	Harvard Merit-Based Fellowship
1995 – 1999	Post Graduate Scholarship, Natural Sciences and Engineering Research Council of Canada
1999 – 2000	McDonnell-Pew Postdoctoral Training Grant in Cognitive Neuroscience
2003 – 2004	Robert K. Root Preceptorship Award, Princeton University
2004 – 2005	Scientific American 50 Award, which honors 50 individual researchers, teams, or companies
2006	Young Investigator Award, Cognitive Neuroscience Society
2008	Chancellor's Award for Research, Vanderbilt University
2009	Young Investigator Award, Vision Sciences Society
2010	Troland Research Award, National Academy of Sciences

C. Contribution to Science

1. The PI has pioneered methods for fMRI data analysis, including multivariate pattern classification methods to measure orientation- and direction-selective responses in the visual cortex (e.g., Kamitani & Tong, 2005) and their role in attentional selection and visual working memory. This work has been highly cited, and these methods have been widely adopted.

- a. Kamitani, Y., & **Tong, F.** (2005). Decoding the visual and subjective contents of the human brain. *Nature Neuroscience*, 8, 679-685. PMID: PMC1808230
- b. Kamitani, Y., & **Tong, F.** (2006). Decoding seen and attended motion directions from activity in the human visual cortex. *Current Biology*, 16, 1096-1102. PMID: PMC1635016
- c. **Tong, F.**, & Pratte, M. S. (2012). Decoding patterns of human brain activity. *Annual Review of Psychology*, 63, 483-509.
- d. Harrison, S. A., & **Tong, F.** (2009). Decoding reveals the contents of visual working memory in early visual areas. *Nature*, 458, 632-635. PMID: PMC2709809

2. The PI has developed novel measures of face recognition ability and visual working memory, and relies on cognitive modeling to characterize human visual performance.

- a. Lorenc, E. S., Pratte, M. S., Angeloni, C. F., & **Tong, F.** (2014). Expertise for upright faces improves the precision but not the capacity of visual working memory. *Attention, Perception, and Psychophysics*, 76(7), 1975-1984.
- b. Pratte, M. S., Park, Y. P., Rademaker, R. L., & **Tong, F.** (2017). Accounting for stimulus-specific variation in precision reveals a discrete capacity limit in visual working memory. *Journal of Experimental Psychology: Human Perception and Performance*, 43, 6-17.
- c. Rademaker, R. L., Park, Y. E., Sack, A. T., & Tong, F. (*In press*). Evidence of gradual loss of precision for simple features and complex objects in visual working memory. *Journal of Experimental Psychology: Human Perception and Performance*.
- d. Pratte, M. S., Ling, S., Swisher, J. D., & Tong, F. (2013). How attention extracts objects from noise. *Journal of Neurophysiology*, 110(6), 1346-1356.

3. The PI has developed novel measures of imagery ability and investigated its relationship to visual working memory.

- a. Pearson, J., Clifford, C., & Tong, F. (2008). The functional impact of mental imagery on conscious perception. *Current Biology*, 18, 982-986.

- b. Pearson, J., Rademaker, R. L., & Tong, F. (2011). Evaluating the mind's eye: The metacognition of visual imagery. *Psychological Science*, 22, 1535-1542.
- c. Tong, F. (2013). Imagery and visual working memory: one and the same? *Trends in Cognitive Sciences*, 17(10) 489-490.
- d. Pratte, M. S., & Tong, F. (2014). Spatial specificity of working memory representations in the early visual cortex. *Journal of Vision*, 14(3):22, 1-12.