

Center for Neural Science and Department of Psychology
New York University
4 Washington Place, New York, NY 10003
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Lab website: <http://www.cns.nyu.edu/malab>

POSITIONS

- 2020-present Professor, Center for Neural Science and Department of Psychology, New York University
Affiliate faculty in the Institute for Decision-Making, the Center for Data Science, the Neuroscience Institute, and the Center for Experimental Social Science; Collaborating Faculty of the NYU-ECNU Institute of Brain and Cognitive Science at NYU Shanghai
- 2013-2020 Associate Professor, Center for Neural Science and Department of Psychology, New York University (with affiliations as above)
- 2008-2013 Assistant Professor, Department of Neuroscience, Baylor College of Medicine
Adjunct faculty in the Department of Psychology, Rice University

TRAINING AND EDUCATION

- 2004-2008 Postdoc, Department of Brain and Cognitive Sciences, University of Rochester
- 2002-2004 Postdoc, Division of Biology, California Institute of Technology
- 1996-2001 PhD in Theoretical Physics, University of Groningen, the Netherlands
- Jan-Jun 2000 Visiting PhD student, Department of Physics, Princeton University
- 1994-1997 BS/MS in Mathematics, University of Groningen
- 1993-1996 BS/MS in Physics, University of Groningen

RESEARCH INTERESTS

Planning, reinforcement learning, social cognition, perceptual decision-making, visual working memory, comparative cognition, optimality/rationality, approximate inference, neural coding, computational methods.

TEACHING, MENTORING, AND OUTREACH (details below)

- Director of the NIH-funded Training Program in Computational Neuroscience, 2023-2028
- Co-Director of the NIH-funded Training Program in Computational Neuroscience, 2016-2021
- Founder and organizer of *Growing up in science*, a set of conversations about the human stories behind scientists
- Founding member of the Scientist Action and Advocacy Network (ScAAN)
- Founding member of NeuWrite NYU, a workshop for neuroscientists and writers (now defunct)
- Active in improving the quality of undergraduate teaching, improving mentorship, social justice in academia, science outreach, science writing, science advocacy, and translating science to policy

PUBLICATIONS

Book

1. Wei Ji Ma, Konrad Kording, Daniel Goldreich (2023), *Bayesian models of perception and action: an introduction*. MIT Press.

Articles

1. Edgar Walker, Stephan Pohl, Rachel Denison, David Barack, Jennifer Laura Lee, Ned Block, Ma WJ, Florent Meyniel (in press), Studying the neural representations of uncertainty. *Nature Neuroscience*.
2. Kelsey Allen, Franziska Brändle, Matthew Botvinick, Judith Fan, Samuel Gershman, Alison Gopnik, Thomas Griffiths, Joshua Hartshorne, Tobias Hauser, Mark Ho, Joshua de Leeuw, Wei Ji Ma, Kou Murayama, Jonathan Nelson, Bas van Opheusden, Thomas Pouncy, Janet Rafner, Iyad Rahwan, Robb Rutledge, Jacob Sherson, Ozgur Simsek, Hugo Spiers, Christopher Summerfield, Mirko Thalmann, Natalia Velez, Andrew Watrous, Joshua Tenenbaum, Eric Schulz (in press). Using Games to Understand the Mind. *Nature Human Behaviour*.
3. Sophie Arnold, April Bailey, Wei Ji Ma, Jennifer Shahade, Andrei Cimpian (2023), Checking Gender Bias: Parents and Mentors Perceive Less Chess Potential in Girls, *Journal of Experimental Psychology: General*.
4. Bas van Opheusden, Gianni Galbiati, Ionatan Kuperwajs, Zahy Bnaya, Yunqi Li, Wei Ji Ma (2023). Revealing the impact of expertise on human planning with a two-player board game. *Nature* 618, 1000-1005.
5. Jennifer Laura Lee, Rachel Denison, Wei Ji Ma (2023). Re-thinking the fixed-criterion model of perceptual decision-making. *The neuroscience of consciousness* (1), niad010.
6. Jiawen Huang, Isabel Velarde, Wei Ji Ma, Chris Baldassano (2023). Schema-based predictive eye movements support sequential memory encoding. *eLife* 12: e82599.
7. Ronald van den Berg, Qijia Zou, Yuhang Li, Wei Ji Ma (2023). No effect of monetary reward in a visual working memory task. *PLoS ONE* 18 (1), e0280257.
8. Heiko Schütt, Aspen Yoo, Joshua Calder-Travis, Wei Ji Ma (2023). Point estimate observers: A new class of models for perceptual decision making. *Psychological Review*, 130 (2), 334–367.
9. Marie Chancel, Henrik Ehrsson, and Wei Ji Ma (2022). Uncertainty-based inference of a common cause for body ownership. *eLife* 11: e77221.
10. Ionatan Kuperwajs, Heiko Schütt, and Wei Ji Ma (2022), Improving a model of human planning via large-scale data and deep neural networks, *Proceedings of the 44th Annual Meeting of the Cognitive Science Society*, 1190-1196.
11. Ili Ma, Camille Phaneuf, Bas van Opheusden, Wei Ji Ma, Catherine Hartley (2022), Distinct developmental trajectories in the cognitive components of complex planning, *Proceedings of the 44th Annual Meeting of the Cognitive Science Society*, 1131-1137.
12. Ionatan Kuperwajs and Wei Ji Ma (2022), A joint analysis of dropout and learning functions in human decision-making with massive online data, *Proceedings of the 44th Annual Meeting of the Cognitive Science Society*, 1197-1203.
13. Sam Zheng, Daisy Lin, Jake Topping, and Wei Ji Ma (2022), Comparing machine and human learning in a planning task of intermediate complexity, *Proceedings of the 44th Annual Meeting of the Cognitive Science Society*, 3601-3607.
14. Jennifer Laura Lee, Wei Ji Ma (2021), Point-estimating observer models for latent cause detection, *PLoS Computational Biology* 17 (10), e1009159.
15. Ionatan Kuperwajs and Wei Ji Ma (2021), Planning to plan: a Bayesian model for optimizing the depth of decision tree search, *Proceedings of the 43rd Annual Meeting of the Cognitive Science Society*, 91-97.
16. Ili Ma, Wei Ji Ma, Todd Gureckis (2021), Information sampling for contingency planning, *Proceedings of the 43rd Annual Meeting of the Cognitive Science Society*, 1000-1006.
17. Hsin-Hung Li, Thomas C. Sprague, Aspen H. Yoo, Wei Ji Ma*, Clayton E. Curtis* (2021), Joint representation of working memory and uncertainty in human cortex. *Neuron* 109, 3699-3712.
18. Aspen H. Yoo, Luigi Acerbi, Wei Ji Ma (2021), Uncertainty is maintained and used in working memory. *Journal of Vision* 21(8): 13.
19. Zhiwei Li and Wei Ji Ma (2021), An uncertainty-based model of the effects of fixation on choice. *PLoS Computational Biology* 17 (10), e1009159.

20. Bas van Opheusden, Luigi Acerbi, Wei Ji Ma (2020), Unbiased and efficient log-likelihood estimation with inverse binomial sampling. *PLoS Computational Biology* 16 (12), e1008483.
21. Joshua Calder-Travis, Wei Ji Ma (2020), Explaining the effects of distractor statistics in visual search. *Journal of Vision* December 2020, Vol.20, 11.
22. Yanli Zhou, Luigi Acerbi, Wei Ji Ma (2020), The role of sensory uncertainty in simple contour integration. *PLoS Computational Biology* 16 (11), e1006308.
23. Ili Ma, Alan Sanfey, Wei Ji Ma (2020), The social cost of gathering information for trust decisions. *Scientific Reports* 10, article number 10473.
24. Hsin-Hung Li, Wei Ji Ma (2020), Confidence reports in decision-making with multiple alternatives violates the Bayesian confidence hypothesis. *Nature Communications* 11, article number: 2004.
25. Maija Honig, Wei Ji Ma, Daryl Fougine (2020). Humans incorporate trial-to-trial working memory uncertainty into rewarded decisions. *Proceedings of the National Academies of Science* 117 (15), 8391-8397.
26. Walker EY, Cotton RJ, Ma WJ*, Tolias AS* (2020), A neural code for probabilistic computation in visual cortex. *Nature Neuroscience* 23, 122-129.
27. Ma WJ (2019), Bayesian models of decision-making: a primer. *Neuron* 104 (1), 164-175.
28. Van Opheusden B, Ma WJ (2019), Tasks for aligning human and machine planning. *Current Opinion in Behavioral Sciences* 29, 127-133.
29. Norton EH, Acerbi L, Ma WJ, Landy M (2019), Human online adaptation to changes in prior probability. *PLoS Computational Biology* 15 (7), e1006681.
30. Song M, Bnaya Z, Ma WJ (2019), Sources of suboptimality in a minimalistic explore-exploit task. *Nature Human Behaviour* 3, 361-368.
31. Orhan AE, Ma WJ (2019), A diverse range of factors affect the nature of neural representations underlying short-term memory. *Nature Neuroscience* 22, 275-283.
32. Ma WJ (2019), Identifying suboptimalities with factorial model comparison. *Behavioral and Brain Sciences* 41, e234.
33. Shen S, Ma WJ (2019), Variable precision in visual perception. *Psychological Review* 126 (1), 89-132.
34. Ma WJ, Higham JP (2018), The role of familiarity in signaler-receiver interactions. *Journal of the Royal Society Interface* 15, 20180568.
35. Adler WT, Ma WJ (2018), The computations underlying human confidence reports are probabilistic, but not Bayesian. *PLoS Computational Biology* 14 (11), e1006572.
36. Yoo AH, Klyszejko Z, Curtis CE, Ma WJ (2018), Strategic allocation of working memory resource. *Scientific reports* 8: 16162.
37. Denison R, Adler WT, Carrasco M, Ma WJ (2018), Humans flexibly incorporate attention-dependent uncertainty into perceptual decisions and confidence. *Proceedings of the National Academy of Sciences* 115 (43), 11090-11095.
38. Adler WT, Ma WJ (2018), Limitations of proposed signatures of Bayesian confidence. *Neural Computation* 30 (12), 3327-3354.
39. Mihali A, Young AG, Adler LA, Halassa MM, Ma WJ (2018), A low-level perceptual correlate of behavioral and clinical deficits in ADHD. *Computational Psychiatry* 2, 141-163.
40. Van den Berg R, Ma WJ (2018), A resource-rational theory of set size effects in visual working memory. *eLife* 7, e34963.
41. Oberauer K, Lewandowsky S, Awh E, Brown GDA, Conway A, Cowan N, Donkin C, Farrell S, Hitch GJ, Hurlstone M, Ma WJ, Morey CC, Nee DE, Schweppe J, Vergauwe E, Ward G (2018), Benchmarks for models of short-term and working memory. *Psychological Bulletin* 144 (9), 885-958.
42. Acerbi L*, Dokka K*, Angelaki DA, Ma WJ (2018), Bayesian comparison of explicit and implicit causal inference strategies in multisensory heading perception. *PLoS Computational Biology* 14 (7), e1006110.
43. Acerbi L, Ma WJ (2017), Practical Bayesian optimization for model fitting with Bayesian Adaptive Direct Search. *Advances in Neural Information Processing Systems*, 1834-1844.
44. Van Opheusden B, Galbiati G, Bnaya Z, Li Y, Ma WJ (2017), A computational model for decision tree search. *Proceedings of the 39th Annual Meeting of the Cognitive Science Society*, 1254-1259.
45. Shin H, Zou Q, Ma WJ (2017), The effects of delay duration on visual working memory for orientation. *Journal of Vision* 17 (14), 10.
46. Ma WJ (2017), The stories behind a CV. *Science* 357 (6354): 942.

47. Stolarczyk S, Bhardwaj M, Bassler KE, Ma WJ, Josic K (2017), Loss of information in feedforward social networks. *Journal of Complex Networks*, cnx032.
48. Devkar D, Wright AA, Ma WJ (2017), Monkeys and humans take local uncertainty into account when localizing a change. *Journal of Vision* 17 (11), 4.
49. Dobs K, Ma WJ, Reddy L (2017), Near-optimal integration of facial form and motion. *Scientific Reports* 7, 11002.
50. Shin H, Ma WJ (2017), Visual short-term memory for oriented, colored objects. *Journal of Vision* 17 (9), 12.
51. Orhan AE, Ma WJ (2017), Efficient probabilistic inference in generic neural networks trained with non-probabilistic feedback. *Nature Communications* 8, 138.
52. Zhu J, Ma WJ (2017), Orientation-dependent biases in length judgments of isolated stimuli. *Journal of vision* 17 (2), 20.
53. Van den Berg R, Yoo AH, Ma WJ (2017), Fechner's law in metacognition: a quantitative model of visual working memory confidence. *Psychological review* 124 (2), 197-214.
54. Mihali A, Van Opheusden B, Ma WJ (2017), Bayesian microsaccade detection. *Journal of Vision* 17 (1), 13.
55. Van Opheusden B, Galbiati G, Bnaya Z, Ma WJ (2016), Do people think like computers? *Computers and Games* 2016, Leiden, the Netherlands, Series Volume 10068. Eds. Plaat A, Kusters W, Van den Herik J, 212-224.
56. Peters MAK, Ma WJ, Shams L (2016), The size-weight illusion is not anti-Bayesian after all. *PeerJ* 4, e2124.
57. Shen S, Ma WJ (2016), A detailed comparison of optimality and simplicity in perceptual decision-making. *Psychological Review* 123, 452-480.
58. Shin H, Ma WJ (2016), Crowdsourced single-trial probes of visual working memory for irrelevant features. *Journal of Vision* 16 (5), 10.
59. Cardoso-Leite P, Kludt R, Vignola G, Ma WJ, Green CS, Bavelier D (2016). Technology consumption and cognitive control: contrasting action video game experience with media multitasking. *Attention, Perception, and Psychophysics* 78 (1), 218-241.
60. Bhardwaj M, Van den Berg R, Josic K, Ma WJ (2016), Do people take stimulus correlations into account in visual search? *PLoS ONE* 11 (3), e0149402.
61. Devkar D, Wright AA, Ma WJ (2015), The same type of visual working memory between primate species. *Journal of Vision* 15 (16), 13.
62. Van Bergen RS, Ma WJ, Pratte MS, Jehee JFM (2015), Sensory uncertainty decoded from visual cortex predicts behavior. *Nature Neuroscience* 18, 1728-1730.
63. Bhardwaj M, Carroll S, Ma WJ, Josic K (2015), Visual decisions in the presence of measurement and stimulus correlations. *Neural Computation* 27, 2318-2353.
64. Orhan AE, Ma WJ (2015), Neural population coding of multiple stimuli. *Journal of Neuroscience* 35 (9), 3825-41.
65. Cai M, Eagleman DE, Ma WJ (2015), Perceived duration is reduced by repetition, but not by high-level expectation. *Journal of Vision* 15 (13), 19.
66. Ma WJ, Dziugaite GK, Shen S, Van den Berg R (2015), Requiem for the max rule. *Vision Research* 116, 179-193.
67. Marsden KE*, Ma WJ*, Deci EL, Ryan RM, Chiu PH (2015), Diminished neural responses predict enhanced intrinsic motivation and sensitivity to external incentive. *Cognitive, Affective, and Behavioral Neuroscience* 15 (2), 276-86.
68. Acerbi L, Ma WJ, Vijayakumar S (2014), A framework for testing the identifiability of Bayesian models of perception. *Advances in Neural Information Processing Systems*, 1026-1034.
69. Ma WJ and Jazayeri M (2014), Neural coding of uncertainty and probability. *Annual Review of Neuroscience* 37, 205-20.
70. Van den Berg R, Ma WJ (2014), "Plateau"-related summary statistics are uninformative for comparing working memory models. *Attention, perception, and psychophysics* 76 (7), 2117-35.
71. Ma WJ, Husain M, Bays PM (2014), Changing concepts of working memory. *Nature Neuroscience* 17, 347-56.
72. Van den Berg R, Awh E, Ma WJ (2014), Factorial comparison of working memory models. *Psychological Review* 121 (1), 124-49.
73. Qamar AT*, Cotton RJ*, George R*, Beck JM, Prezhdo E, Laudano A, Tolia AS, Ma WJ (2013), Trial-to-trial, uncertainty-based adjustment of decision boundaries in visual categorization. *Proceedings of the National Academy of Sciences* 110 (50), 20332-7.
74. Zaidel A, Ma WJ, Angelaki DE (2013), Supervised cue calibration relies on the multisensory percept. *Neuron* 80 (6), 1544-57.

75. Magnotti JF, Ma WJ, Beauchamp MS (2013), Causal inference of asynchronous audiovisual speech. *Frontiers in Perception Science* 4, 798.
76. Pouget A, Beck, JM, Ma WJ, Latham PE (2013). Probabilistic brains: knowns and unknowns. *Nature Neuroscience* 16, 1170-8.
77. Mazyar H*, Van den Berg R*, Seilheimer RL*, Ma WJ (2013), Independence is elusive: set size effects on sensory precision in visual search. *Journal of Vision* 13 (5), 8, 1-14.
78. Keshvari S, Van den Berg R, Ma WJ (2013). No evidence for an item limit in change detection. *PLoS Computational Biology*, 9(2), e1002927.
79. Ma WJ, Rahmati M (2013), Towards a neural implementation of causal inference in cue combination. *Multisensory Research* 26, 159-76.
80. Ma WJ (2012), Organizing probabilistic models of perception. *Trends in Cognitive Sciences*, 16 (10), 511-18.
81. Keshvari S, Van den Berg R, Ma WJ (2012), Probabilistic computation in perception under variability in encoding precision. *PLoS ONE*, 7(6): e40216.
82. Berens P, Ecker AS, Cotton RJ, Ma WJ, Bethge M, Tolias AS (2012), A fast and simple population code for orientation in primate V1. *Journal of Neuroscience*, 32 (31), 10618-26.
83. Mazyar H*, Van den Berg R*, Ma WJ (2012), Does precision decrease with set size? *Journal of Vision* 12 (6), 10.
84. Van den Berg R*, Shin H*, Chou WC, George R, Ma WJ (2012), Variability in encoding precision accounts for visual short-term memory limitations. *Proceedings of the National Academy of Sciences* 109 (22), 8780-5.
85. Beck JM*, Ma WJ*, Pitkow X, Latham PE, Pouget A (2012), Not noisy, just wrong: the role of suboptimal inference in behavioral variability. *Neuron* 74 (1), 30-39.
86. Wright, AA, Katz JS, Ma WJ (2012), How to be proactive about interference: lessons from animal memory. *Psychological Science* 23 (5), 453-8.
87. Van den Berg R, Ma WJ (2012), Robust averaging during perceptual judgment is not optimal. Letter in response to De Gardelle and Summerfield. *Proceedings of the National Academy of Sciences*, doi:10.1073/pnas.1119078109.
88. Van den Berg R, Vogel M, Josic K, Ma WJ (2012), Optimal inference of sameness. *Proceedings of the National Academy of Sciences* 109 (8), 3178-83.
89. Elmore LC, Ma WJ, Magnotti JF, Leising KJ, Passaro AD, Katz JS, Wright AA (2011), Visual short-term memory compared in rhesus monkeys and humans. *Current Biology* 21 (11), 975-9.
90. Ma WJ*, Navalpakkam V*, Beck JM*, Van den Berg R*, Pouget A (2011), Behavior and neural basis of near-optimal visual search. *Nature Neuroscience* 14, 783-90.
91. Ma WJ, Beck JM, Pouget A (2011), A neural implementation of optimal cue integration. In *Sensory cue integration*. Trommershäuser J, Körding K, Landy MS (editors), Oxford University Press, New York, NY.
92. Ma WJ (2010), Signal detection theory, uncertainty, and Poisson-like population codes. *Vision Research* 50, 2308-19.
93. Ma WJ, Huang W (2009), No capacity limit in attentional tracking: evidence for probabilistic inference under a resource constraint. *Journal of Vision* 9 (11), 3.
94. Zhou MM, Ma WJ, Deci E (2009), The importance of autonomy for rural Chinese children's motivation for learning. *Learning and Individual Differences* 19, 492-8.
95. Ma WJ*, Zhou X*, Ross LA, Foxe JJ, Parra LC (2009). Lip-reading aids word recognition most in moderate noise: a Bayesian explanation using high-dimensional feature space. *PLoS ONE* 4 (3), e4638.
96. Ma WJ (2009), Bayesian approach to perception. In *SAGE Encyclopedia of Perception*, Goldstein EB ed., 201-5, SAGE Publications.
97. Ma WJ, Pouget A (2009), Population coding. In *Encyclopedia of Neuroscience*. Squire LR (ed.), 7, 749-55. Academic Press, Oxford.
98. Beck JM*, Ma WJ*, Kiani R, Hanks TD, Churchland AK, Roitman JD, Shadlen MN, Latham, PE, and Pouget A (2008), Bayesian decision making with probabilistic population codes. *Neuron* 60, 1142-5.
99. Ma WJ, Beck JM, Pouget A (2008), Spiking networks for Bayesian inference and choice. *Current Opinion in Neurobiology* 18, 217-22.
100. Ma WJ, Pouget A (2008), Linking neurons to behavior in multisensory perception: a computational review. *Brain Research* 1242, 4-12.
101. Beierholm U, Körding K, Shams L, Ma WJ (2007), Comparing Bayesian models for multisensory cue combination without mandatory integration. *Advances in Neural Information Processing Systems*, 81-88.

102. Kording K*, Beierholm U*, Ma WJ*, Quartz S, Tenenbaum JB, Shams L (2007), Causal inference in multisensory perception. *PLoS ONE* 2, e943.
103. Beck JM, Ma WJ, Latham PE, Pouget A (2007), Probabilistic population codes and the exponential family of distributions. *Progress in Brain Research* Vol. 165. Cisek, Drew, and Kalaska (editors), 511-21, Elsevier Ltd.
104. Ma WJ*, Beck JM*, Latham PE, Pouget A (2006), Bayesian inference with probabilistic population codes. *Nature Neuroscience* 9, 1432-8.
105. Ma WJ, Hamker F, Koch C (2006), Neural Mechanisms Underlying Temporal Aspects of Conscious Visual Perception. In *The First Half Second: The Microgenesis and Temporal Dynamics of Unconscious and Conscious Visual Processes*. Ögmen H, Breitmeyer BG (eds.), 275-94, MIT Press.
106. Shams L, Ma WJ, Beierholm U (2005), Sound-induced flash illusion as an optimal percept. *NeuroReport* 16, 1923-27.
107. Wilken P, Ma WJ (2004), A detection theory account of change detection. *Journal of Vision* 4, 1120-35.
108. Hofman C, Ma WK (2001), Deformations of closed strings and topological open membranes, *Journal of High Energy Physics* 06, 033.
109. Hofman C, Ma WK (2001), Deformations of topological open strings. *Journal of High Energy Physics* 01, 035.

*: equal contributions

Preprints

1. Dongjae Kim, Heiko Schütt, Wei Ji Ma (posted Sep 15, 2023). Reward prediction error neurons implement an efficient code for reward. <https://doi.org/10.1101/2022.11.03.515104>. Under review at *Nature Neuroscience*.
2. Peiyuan Zhang and Wei Ji Ma (posted July 31, 2023). Temporal discounting predicts procrastination in a real-world task. <https://doi.org/10.31234/osf.io/gwj7h>.
3. Ionatan Kuperwajs, Heiko Schuett, Wei Ji Ma (posted June 9, 2023). Using deep neural networks as a guide for modeling human planning. <https://osf.io/preprints/psyarxiv/wh8yu>. Under review for *Scientific Reports*.
4. Ili Ma, Camille Phaneuf, Bas van Opheusden, Wei Ji Ma, Catherine Hartley (posted Dec 27, 2022). The component processes of complex planning follow distinct developmental trajectories. <https://doi.org/10.31234/osf.io/d62rw>. Under revision for *eLife*.
5. Paul Bays, Sebastian Schneegans, Wei Ji Ma, Timothy Brady (posted Oct 6, 2022), Representation and computation in working memory. <https://doi.org/10.31234/osf.io/kubr9>. Under revision for *Nature Neuroscience*.
6. Long Ni, Wei Ji Ma (posted Jun 11, 2021). Disentangling sources of interference in the N-back task. <https://doi.org/10.31234/osf.io/u9gnd>. Under revision for *Psychological Review*.
7. Zeming Fang, Catherine Olsson, Wei Ji Ma, Jonathan Winawer (posted Nov 14, 2021). Normalization by orientation anisotropy in human V1-V3. <https://doi.org/10.1101/2021.11.06.467486>. Under review at *PLoS Computational Biology*.
8. Andra Mihali and Wei Ji Ma (posted Aug 24, 2020). The psychophysics of visual search with heterogeneous distractors. <https://doi.org/10.1101/2020.08.10.244707>. Under revision for *Psychological Review*.

AWARDS

2016: Making a Difference Award from NYU

2018: Iakobachvili Faculty Science Award from NYU's Faculty of Arts and Science

2020: Golden Dozen Teaching Award from NYU's College of Arts and Science

2021: Jeffrey L. Elman Prize for Scientific Achievement and Community Building from the Cognitive Science Society

2023: Impact Goals Award from the Center for Advancing Research Impact in Society (ARIS)

GRANTS

Active

- Training Program in Computational Neuroscience. NIH (NIDA). T90DA059110/R90DA060339. \$3,472,402. Role: PD
- The cognitive mechanisms of complex planning. NIH (NIMH) R21 MH126269. Sep 2022-Aug 2024. \$272,409 Role: PI

- Collaborative Research: CompCog: RI: Medium: Understanding human planning through AI-assisted analysis of a massive chess dataset. National Science Foundation. \$562,614. Role: Co-PI (with Thomas Griffiths, Princeton University, and Marcelo Mattar, NYU)
- Prospective and retrospective mechanisms in complex planning by humans. National Science Foundation. Oct 2020-Sep 2024. \$495,049. Role: PI
- Towards a computational cognitive science of helping. National Science Foundation, Oct 2020-Sep 2024. \$645,787. Role: Co-PI (with Todd Gureckis).

Complete

- Neural basis of planning. NIH (NIMH), R01MH118925 (Collaborative Research in Computational Neuroscience), Aug 2018 – May 2023. \$1,994,792. Role: Co-PI (with Daeyeol Lee, Yale University)
- Probabilistic coding in cortical populations. NIH (NEI) R01EY026927, Apr 2017 – Mar 2023 (NCE). \$1,952,270. Role: Co-PI (with Andreas Tolias)
- Neural decoding of working memory. NIH (NEI), R01EY027925-01, Apr 2017 – Mar 2022. \$1,526,805. Role: Co-PI (with Clayton Curtis)
- The role of short-term memory uncertainty in visual decision-making. NIH (NEI) R01EY020958, Sep 2016-Jul 2021. \$1,063,995. Role: PI
- Training a new generation of computational neuroscientists bridging neurobiology and cognition. NIH T90DA043219 and R90DA043849. Training grant funding 5 PhD students and 6 undergraduate students each year. Sep 2016 – Aug 2021. Role: Co-PD (with Xiao-Jing Wang)
- Human reasoning and learning in a complex but tractable decision-making paradigm. NSF IIS-1344256 (INSPIRE), Oct 2013-Sep 2018. \$666,782 total direct costs. Role: PI
- Directly probing the probabilistic nature of working memory, NYU Abu Dhabi Research Enhancement Fund Sep 2015-Aug 2017. \$245,160. Role: Co-PI (with Daryl Fougine)
- Developing novel psychophysical tasks for localizing cognitive deficits in neurodevelopmental disorders, NYU Applied Research Support Fund. \$50,000. 2015-2017. Role: Co-PI (with Michael Halassa)
- Measuring and modeling attentional limitations in split-second visual decisions, DoD (ARO) W911NF1210262/W911NF1410476, July 2012-June 2015, \$223,166 total direct costs. Role: PI
- Neural mechanisms of vestibular function, NIH (NIDCD) R01 DC04260, Dec 2011-July 2013, \$34,293 total direct costs. Role: Co-I (PI: Dora Angelaki)
- Memory processing and cortical plasticity, NIH (NIMH) 1R01MH091038, Sep 2011-Aug 2012, \$5,830 total direct costs. Role: Co-I (PI: Anthony Wright)
- Coding and propagation of uncertainty information during perceptual decisions, NSF IIS-1132009, Sep 2011-Aug 2015, \$525,967 total direct costs. Role: Co-PI (with Andreas Tolias)
- Behavioral and neural mechanisms of visual short-term memory. NIH (NEI) 1R01EY020958, Aug 2010-July 2016, \$1,000,000 total direct costs. Role: PI

Grants to trainees

- Ronald van den Berg, Optimal perception under uncertainty: Testing Bayesian models of vision. Netherlands Organisation for Scientific Research (Rubicon), 2009-2011. Role: Primary advisor
- Will Adler, National Science Foundation Graduate Research Fellowship Program, 2015-2018. Role: Primary advisor
- Thomas Sprague, Effects of behavioral priority on working memory representations. F32 EY028438-01, 2017-2020. Role: Secondary advisor (primary: Clayton Curtis)
- Hsin-Hung Li, Swartz Foundation Postdoctoral Fellowship, 2021-2023. Role: Co-advisor (with Clayton Curtis)
- Ionatan Kuperwajs, National Science Foundation Graduate Research Fellowship Program, 2020-2023. Role: Primary advisor

TEACHING

1. *Undergraduate teaching* (all courses developed from scratch)
 - 2014, 2015, 2016, 2017, 2019, 2023: From illusions to inference
 - 2015: Introduction to theoretical neuroscience (also graduate)
 - 2016-2018: Introduction to neural data analysis
 - 2019, 2020: Psychological science and society

- 2020: Introduction to computational neuroscience: populations, networks, and behavior
2. *Graduate teaching* (all courses developed from scratch)
 - 2016-2018, 2021: Bayesian modeling of behavior (also undergraduate)
 - 2014: Neural population coding (graduate seminar)
 - 2010-2013: Theoretical Neuroscience: Learning, Perception and Cognition
 - 2009: Topics in theoretical and computational neuroscience
 - 2009-2012: Introduction to Neuroscience Methods (3 lectures + 3 labs)
 - Guest lectures: Applications to Biology of Computation (BCM, 2012); Advanced Digital Signal Processing (Rice University, 2012); Cognitive Neuroscience I (University of Texas at Houston, 2009, 2011, 2012); Seminar in Cognitive Psychology (University of Houston, 2012); Cognitive and Behavioral Neuroscience (NYU; 2014-2016, 2018)
 3. *Other graduate-level teaching*
 - Computational and Systems Neuroscience, tutorial *Bayesian modeling of behavior*, Feb 28, 2019
 - Cold Spring Harbor course “Computational neuroscience: vision”, tutorial on Bayesian modeling, July 2018
 - Sloan-Nomis summer school “Cognitive foundations of economic behavior”, July 2018 (taught remotely)
 - Sloan-Nomis summer school “Cognitive foundations of economic behavior”, July 2019
 - Computational Cognitive Neuroscience, tutorial *Modeling of behavior*, Sep 7, 2017
 - Vision Sciences Society, tutorial on Bayesian modeling, May 22, 2017
 - NYU Shanghai, tutorial on Bayesian modeling, Mar 17, 2016
 - Boston University, tutorial on Bayesian modeling, Feb 25, 2016
 - Summer Institute in Cognitive Neuroscience, tutorial on Bayesian modeling, Santa Barbara, June 2015
 - Cold Spring Harbor course “Computational neuroscience: vision”, tutorial on Bayesian modeling, July 2014
 - *Bayesian modeling of perception*, Tsinghua University, July 2012 (self-organized five-day course)
 - Summer School on Cognitive and Computational Neuroscience, Cold Spring Harbor Asia, Beijing, July 2012
 - *Introduction to probabilistic models of perception*, University of Groningen, Brain, Cognitive, and Neurosciences, Oct 2011 (self-organized two-day course)
 - Course in computational neuroscience in Gulbenkian-Champalimaud Neuroscience Program, Instituto Gulbenkian de Ciência, Oeiras, Portugal, Jun 2009
 - Course in computational neuroscience in Gulbenkian-Champalimaud Neuroscience Program, Instituto Gulbenkian de Ciência, Oeiras, Portugal, Feb 2008

RESEARCH ADVISING

1. Postdocs
 1. Ronald van den Berg, Oct 2009-Dec 2012. Now Associate Professor at the University of Stockholm, Sweden.
 2. Nuwan de Silva, Dec 2011-Dec 2015. Now a data scientist.
 3. Emin Orhan, Sep 2013-Aug 2016. Now a research scientist at NYU.
 4. Luigi Acerbi, Oct 2014-Oct 2017. Now Assistant Professor at the University of Helsinki, Finland
 5. Zahy Bnaya, Nov 2014-Feb 2018. Now a data scientist.
 6. Dongjae Kim, May 2021-Aug 2022. Now Assistant Professor at Dankook University.
 7. Heiko Schütt, Oct 2018-Mar 2023. Now Assistant Professor at University of Luxembourg.
 8. Hsin-Hung Li, Feb 2019-present (joint with Clayton Curtis)
2. PhD students (primary advisor)
 1. Hongsup Shin, BCM. Joined the lab in May 2011. Defended on March 24, 2015. Stayed on as a postdoc until Jan 2016. Now a data scientist.
 2. Will Adler, NYU. Joined the lab in Apr 2013. Defended on Dec 15, 2017. Now Senior Technologist in Elections and Democracy at the Center for Democracy and Technology.
 3. Andra Mihali, NYU. Joined the lab in Nov 2013. Defended on Apr 9, 2018. Stayed on as a postdoc to Mar 2019. Now a postdoc at Columbia University.
 4. Sebastiaan van Opheusden, NYU. Joined the lab in Apr 2014. Defended on Oct 28, 2018. Now a postdoc at Princeton University.
 5. Aspen Yoo, NYU. Joined the lab in Sep 2014. Defended Sep 6, 2019. Now a postdoc at UC Berkeley.

6. Stuart Jackson, NYU. Initially supervised by Marisa Carrasco and David Heeger. Joined the lab in Dec 2013. Defended on Dec 10, 2015. Now a data scientist.
 7. Carolina di Tella, NYU. Initially supervised by Paul Glimcher. Joined the lab in Dec 2017. Defended on July 7, 2020. Now a lecturer at the Universidad de San Andres.
 8. Jenn Laura Lee, NYU. Joined the lab in May 2018. Defended Feb 16, 2022. Now works for the government of Canada.
 9. Peiyuan Zhang, NYU. Joined the lab in Jul 2018.
 10. Xiang Li, NYU. Joined the lab in Sep 2018.
 11. Ionatan Kuperwajs, NYU. Joined the lab in Jan 2019.
 12. Daisy Lin, NYU. Joined the lab in Nov 2020.
 13. Nastaran Arfaei, NYU. Joined the lab in Jun 2022.
 14. Jordan Lei, NYU. Joined the lab in Aug 2022.
 15. Jeroen Olieslagers, NYU. Joined the lab in Aug 2022.
3. PhD students (secondary advisor)
 1. Manisha Bhardwaj, University of Houston, May 2012-Nov 2013. Defended on Nov 18, 2013. Primary advisor: Kresimir Josic.
 2. Deepna Devkar, University of Texas Houston, 2011-2014. Defended on Oct 20, 2014. Primary advisor: Anthony Wright.
 3. Mingbo Cai, BCM, 2010-2015. Defended on April 7, 2015. Primary advisor: David Eagleman.
 4. Edgar Walker, BCM, 2012-2019. Defended on Jun 4, 2019. Primary advisor: Andreas Tolias.
 5. Shan Shen, BCM, 2011-2017. Defended on Feb 9, 2018. Primary advisor: Andreas Tolias.
 2. PhD students (rotations and visitors)
 1. Totals: 9 rotation students at BCM, 3 rotation students at NYU (Pam Osborn Popp, David Halpern, Alan Lai), not counting those who joined my lab
 2. Long Ni, rotation student (NYU Shanghai) Sep 2016-Aug 2017
 3. Joshua Calder-Travis, PhD student at Oxford University, visited Sep-Dec 2018
 4. Anne-Lene Sax, PhD student at University of Bristol, visiting Jun-Aug 2019
 5. Jake Topping, Masters student at Oxford University, visited Jul-Sep 2019
 6. Noémi Éltető, PhD student at Max Planck Institute for Biological Cybernetics, Tübingen, Germany, visited Sep-Oct 2023.
 4. Post-Masters trainees
 1. Wen-Chuang Chou, Mar-Oct 2009
 2. Helga Mazyar, 2010-12
 3. Gintare Dziugaite, Jul-Sep 2011
 4. Yang Chen, Nov 2012-Feb 2013
 5. Zeyan Shu, Sep 2012-Sep 2014
 5. Masters students
 1. Masih Rahmati, Master's student in Electrical Engineering at Chalmers University of Technology, Oct 2009-Sep 2011
 2. Michael Vogel, Master's student in Mathematics at University of Houston, Jun-Aug 2010 (primary advisor: Kresimir Josic)
 3. Gianni Galbiati, Master's student in Psychology at NYU (continued after graduation as a post-masters trainee), Jul 2014-Jul 2017
 4. Zeming Fang, Master's student in Psychology at NYU, Mar 2017-Feb 2018 (co-advised with Jonathan Winawer; continued after graduation as a post-masters trainee)
 6. Post-Bachelors research assistants
 1. Shaiyan Keshvari, Aug 2010-Aug 2011
 2. Eugenia Prezhdo, Oct 2012-Aug 2013
 7. Undergraduate students
 1. Elaina Bolinger (Jacobs University), Oct-Dec 2008
 2. Ryan George (Rice University), Oct 2008-Jan 2009 and Aug 2009-May 2011
 3. Trevor Holland, Oct 2008-Aug 2009 and as a post-bac, Jan 2012-Apr 2014

4. Karen Marsden (Rice University), May 2009-May 2012, co-supervised by Pearl Chiu
 5. Jun-Aug 2009, 2010, and 2011: Chris Nguyen, David Krueger (co-supervised by Kresimir Josic), Noam Roth, Rose Psalmond, through the Rice/TMC Research Experience for Undergraduates in Computational Neuroscience
 6. May-Jul 2009: Samuel Poulos, through the Summer Medical and Research Training Program.
 7. Ahmad Qamar (University of Chicago), Jun 2010-Jun 2012
 8. Jielei Emma Zhu (NYU), Nov 2013-Aug 2016
 9. Zhiwei Li, was a summer student visiting from Beijing University (Jul-Sep 2014)
 10. Mingyu Song, was a summer student visiting from Beijing University (Jul-Sep 2015)
 11. Maija Honig (NYU), Feb 2015-Feb 2018 (continued as a post-bac)
 12. Yanli Zhou (NYU), May 2015-Mar 2018 (continued as a post-bac), now a PhD student at NYU
 13. Feroz Khalidi (NYU), Jul-Aug 2016
 14. Yunqi Li (NYU), Sep 2016 to Jul 2017
 15. Paul Gucik (NYU), Dec 2016-Oct 2017
 16. Angelo Pennati (NYU), Feb-Jun 2017
 17. Xinyi Xu (NYU Shanghai), Jan-May 2018
 18. Zhenyu Zhu, Jun 2016-July 2017, was a visiting undergraduate from NYU Shanghai. Now a PhD student at Brown University
 19. Qijia Zou (NYU), June 2017-Sep 2018
 20. Yichen Li (NYU), Oct 2018-Aug 2020. Now a PhD student at Harvard University
 21. Qixiu Fu (NYU), Jul 2019-Aug 2020. Now a PhD student at Mount Sinai School of Medicine.
 22. Sammy Tavassoli (NYU), Aug 2020-Aug 2021
 23. Luisa Leonelli (NYU), Jul 2020-Jul 2022 (continued as a post-bac)
 24. Shucheng Li (NYU Shanghai), Sep 2023-present
8. High school students: mentored four in total, each with their own research project.

COMMUNITY

Training Program in Computational Neuroscience (TPCN)

I am the Program Director of the Training Program and Computational Neuroscience, funded by a five-year training grant from NIH (T90DA059110 and R90DA060339), totaling \$3.47 million. Each year, the program will support 8 graduate and 6 undergraduate trainees. Trainees will do research in computational neuroscience or computational cognitive science. The program will monitor research progress and organize specialized training activities. The program will include several initiatives to recruit and prepare applicants from underrepresented backgrounds. I was co-Director of the first edition of this program from 2016 to 2021, which received positive evaluations.

Growing up in science

In 2014, I founded an interdepartmental series “Growing up in science”: conversations with faculty in which they share their life stories with an emphasis on struggles, doubts, detours, and failures, and in which they engage in discussion with students and postdocs. I described the concept in Ma WJ (2017), The stories behind a CV, *Science* 357 (6354), 942. Many “chapters” and spin-offs of Growing up in Science have been established around the world. In April 2020, a global online *Growing up in Science* series was started. Besides regular “unofficial stories” types of events, this series has featured themed events around anti-racism, mentorship, and work-life balance. I have personally held GUIS events in the following places:

1. Radboud University Nijmegen, Donders Institute, Jul 8, 2014
2. Cold Spring Harbor course on computational neuroscience: vision, Jul 21, 2014
3. University of Cambridge, Oct 2, 2014
4. Beijing University, Department of Psychology, Jan 2, 2015
5. University of Groningen, Behavioral, Cognitive and Neurosciences, Mar 19, 2015
6. Baylor College of Medicine, Department of Neuroscience, Mar 24, 2015
7. Stanford University, Department of Psychology, Jun 3, 2015
8. Summer Institute in Cognitive Neuroscience, Santa Barbara, Jun 25, 2015

9. SAMSI Program on Challenges in Computational Neuroscience, Opening Workshop, Aug 19, 2015
10. Optical Society of America Fall Vision Meeting, Oct 17, 2015
11. University of Amsterdam, Jan 13, 2016
12. Radboud University Nijmegen, Donders Institute, Jan 14, 2016
13. Boston University, Feb 24, 2016
14. NYU Shanghai, Mar 17, 2016
15. Princeton, Apr 19, 2016
16. MIT, Apr 22, 2016
17. Cold Spring Harbor course on computational neuroscience: vision, Jul 22, 2016
18. Cold Spring Harbor Laboratory Postdoc retreat, Oct 7, 2016
19. University of Zurich, Oct 21, 2016
20. University of Pennsylvania, Oct 31, 2016
21. Harvard University, Dec 13, 2016
22. SUNY Optometry, Jan 20, 2017
23. City University of New York, Feb 16, 2017
24. Columbia University Teachers College, Feb 20, 2017
25. Computational and Systems Neuroscience (conference), Feb 24, 2017
26. Cold Spring Harbor course on computational neuroscience: vision, Jul 11, 2018
27. Yale University, Department of Psychology and Neuroscience major, Sep 21, 2018
28. NYU Department of Chemistry, as part of the course "Professional development in the sciences", Oct 26, 2018
29. Columbia University, Zuckerman Institute, organized by the Columbia University Postdoc Society, Oct 26, 2018
30. "Object perception, attention, and memory" (OPAM) conference, New Orleans, Nov 15, 2018 (keynote address)
31. Queens University, Centre for Neuroscience Studies, Nov 22, 2018
32. "Teaching at the tap room" discussion series, organized by NYU's Center for the Advancement of Teaching, Feb 6, 2019
33. University of Zurich, Jun 27, 2019
34. Sloan-Nomis Summer School on the Cognitive Foundations of Economic Behavior, Vitznau, Switzerland, Jun 29, 2019
35. Brown University, Oct 17, 2019
36. University of Pennsylvania, MindCore, Nov 21, 2019
37. University College London, Gatsby Computational Neuroscience Unit, Jan 15, 2020
38. Oxford University, Department of Experimental Psychology, Jan 17, 2020
39. Weill-Cornell Medicine, Jan 22, 2020
40. NeuroMatch conference, May 26, 2020
41. Seoul National University, Oct 20, 2020
42. Central European University, Feb 25, 2021
43. Maastricht University, Mar 11, 2021 (organized by the Maastricht Young Academy)
44. Max Planck Institute for Biological Cybernetics, May 25, 2021
45. Vienna Doctoral School in Cognition, Behavior, and Neuroscience, Sep 16, 2021
46. Swedish University of Agricultural Sciences, Sep 28, 2021
47. Chinese Open Science Network, Oct 21, 2021
48. Indiana University, Bloomington, Cognitive Science Program, Nov 1, 2021
49. University of California San Diego, Psychology and Neuroscience, Jun 1, 2023

Anti-racism, diversity, equity, and inclusion

1. 2020-present: Co-organizer and moderator of the *Workshop on race and racism in science*, a four-lecture workshop for the Center for Neural Science, Department of Psychology, and Department of Biology at NYU.
2. 2020-2021: Organizer of anti-racism events in the *Growing up in Science* global online event series. For example, on July 22, 2020, we hosted Angela Saini, author of *Superior: the return of race science*.
3. 2020-2021: Coordinator of a working group in the Department of Psychology to replace trainee reimbursements for work expenses by upfront payments (to address a concrete aspect of economic justice)

4. Organizer and moderator of the *Minisymposium on diversity and inclusion and science: evidence and action*, Dec 7, 2018.
5. Organizer and moderator of the *Diversity and inclusion and science: personal narratives*, Aug 24, 2018; organizer of the same event on Aug 30, 2019.

Other community-building (local)

1. Founder of the *Computational Cognitive Science Community Forum*, a monthly event featuring very brief presentations in which people share a skill or ask a question. Meant to develop a cross-lab skill base and to avoid reinventing the wheel.
2. Founder of *Meet your professors*, an NYU event series in which psychology undergraduates meet faculty members for an evening of discussion about the professors' life stories as well as research opportunities and career choices. Organized and chaired on Feb 12, 2015; Apr 15, 2015; Sep 30, 2015; Feb 26, 2016; Feb 15, 2017
3. Faculty guest in an NYU Psych Club mentoring event on April 13, 2015
4. Faculty guest in NYU's Society for Undergraduate Neural Science video interview, 2015
5. Faculty guest in LiveWellNYU video, 2016
6. Organizer of "Psychathlon" for psychology undergraduates (hosted by the NYU Psychological Association), a night of competitive psychology experiments, Apr 5 and Dec 1 2016
7. Participated in a Research Mentor Training Workshop, Gulf Coast Consortium for Quantitative Biomedical Sciences, December 2012
8. Poster judge at Baylor College of Medicine Graduate Student Research Symposium (2011); at Summer Undergraduate Research Programs in Biosciences and Bioengineering (2010 and 2011)
9. Founder and coordinator, Complexity in Biology Club, California Institute of Technology, 2003-4

OUTREACH

Classroom visits and other lectures/presentations for general audiences

1. "Science and Advocacy Jeopardy" at the Science and Society happy hour organized by the March for Science NYC, part of the "Pregame your Brain" series held at *Caveat*, New York NY, Aug 3, 2018.
2. North Star Academy High School, Newark NJ, Feb 7, 2018
3. Crossroads Juvenile Detention Center, New York NY, Oct 10, 2017
4. Neuroscience outreach event at *Caveat*, New York NY, Sep 29, 2017
5. Stuyvesant High School, New York NY, Jun 9, 2017
6. North Star Academy High School, Newark NJ, Nov 15, 2016
7. *Visual illusions*, Studium Generale Groningen, Jan 18, 2016
8. *Bridging space and time*, Merchant House Amsterdam, Jan 15, 2016 (paired with modern dance performance choreographed by Jody Oberfelder)
9. *Illusions and the brain*, NYU Parents Council, Oct 23, 2015
10. NYU Program "Clinically Rich Integrated Science Program" (for high school juniors), Jul 17, 2015.
11. Visual illusion demonstration, World Science Festival, May 31, 2015
12. North Star Academy High School, Newark NJ, April 2015
13. Praedinius Gymnasium, Groningen, March 20, 2015
14. Willem Lodewijk Gymnasium, Groningen, March 20, 2015
15. Brain Awareness Week, NYU Community Brain Fair, March 2014
16. Rice University, Brain Awareness Week Lecture Series: Frontiers of Neuroscience, organized by "Building Rice Academics in Neuroscience" (undergraduate club), March 13, 2010
17. Willem Lodewijk Gymnasium, Groningen, 2011
18. *Fooling the brain*, Summer Math Days, Rice University, June 6, 2011
19. Praedinius Gymnasium, Groningen, 2004
20. Willem Lodewijk Gymnasium, Groningen, 2004

Written science communication

- Article "*The real reasons the top chess players are all men*", Dec 11, 2020 on Slate

- Article “*What gender gap in chess?*”, Oct 15, 2020 on Chessbase (<https://en.chessbase.com/post/what-gender-gap-in-chess>)
- Article “*Women in chess: the role of innate-ability beliefs*”, May 30, 2015 on Chessbase
- Press about our research in popular media: Volkskrant (Dutch newspaper), May 16, 2011; Parool (Dutch newspaper), May 21, 2011; Labyrinth (Dutch radio program), May 23, 2011; CNN American Morning, March 4, 2009; Science Daily, March 3, 2009; MSNBC The Body Odd, March 27, 2009; CNN, January 12, 2009; Scientific American, Dec 30, 2008
- Columnist. Newsletter of Behavioural, Cognitive and Neurosciences, University of Groningen, 2002-5
- Columnist, *Natuurwetenschap en Techniek* (Dutch popular science magazine), 2002-4

Other community-building and outreach

- Founding member and faculty lead of the *Scientist Action and Advocacy Network* (ScaAN), a New York-based group of scientists who provide pro-bono science consultation for non-profit organizations that work towards social and environmental progress. Served as ad-hoc project leader, delivered testimony to committees of the New York City Council, spoke about ScaAN at the March for Science New York City (2018) and at the NYU Science Diplomacy Workshop (2018), and held workshops about ScaAN at various venues.
- February 2019: *Are humans able to make the best decisions under uncertainty?* The lab was profiled in the “Lab work” section of the APA Monitor, published by the American Psychological Association
- Expert guest in a video *Illusions for a better society* by artists Aaron Duffy, Lake Buckley, and Jack Foster, shown at TED 2018, Apr 13, 2018
- Organizer of Science/Dance workshop at NYU, bringing together scientists and professional dancers, July 10, 2017
- 2017: Advocated for NIH funding at the New York office of U.S. Senator Kirsten Gillibrand on the Regional Hill Day of the Society for Neuroscience
- 2014-2017: Neuroscience consultant on “*The Brain Piece*”, modern dance / interactive performance by choreographer Jody Oberfelder, which premiered at New York Live Arts from Jun 28-Jul 1, 2017
- Founding member (Dec 2014) of *NYU NeuWrite* (founder: Alex Berardino), a consortium of neuroscientists and writers who meet monthly to workshop neuroscience writings for general audiences
 - Contributed several pieces
 - Dec 15, 2016: Given workshop on science communication
 - Sep 28 2017: Panelist
- Given workshop on science communication:
 - NYU Center for Neural Science retreat (Nov 15, 2015)
 - Cold Spring Harbor Laboratory Postdoc retreat (Oct 7, 2016)
 - At NYU Neuwrite (Dec 15, 2016)
- Co-founder (2005) and current Chairperson, Rural China Education Foundation
- Founder and coordinator, Physics Promotion Team, University of Groningen, 2002

ACADEMIC SERVICE

Reviewing

- *Journal reviewing*: Nature, Nature Neuroscience, Nature Reviews Neuroscience, PNAS, Trends in Cognitive Sciences, Trends in Neurosciences, Cerebral Cortex, Journal of Neuroscience, Journal of Neurophysiology, PLOS Computational Biology, PLOS ONE, Psychological Review, Journal of Vision, Journal of Experimental Psychology: General, Journal of Experimental Psychology: Learning, Memory, and Cognition, Cognitive Neuroscience, Memory and Cognition, Neural Computation, NeuroImage, Frontiers in Human Neuroscience, Vision Research, Brain Research, Neural Networks, Biological Cybernetics, Experimental Psychology, IEEE Transactions on Haptics, Cognitive Psychology, Attention Perception and Psychophysics, Journal of Mathematical Psychology, Quarterly Journal of Experimental Psychology
- *Conference reviewing*: Cosyne, Neural Information Processing Systems, Cognitive Science Society
- *Grant reviewing*: National Science Foundation CAREER Program; NIH – Cognition and Perception; NSF – Perception, Action, Cognition; Human Frontiers Science Program

Local committees

- BCM PhD Admissions committee, 2009-2012
- NYU Shanghai Neuroscience faculty search, 2014-2015
- NYU Psychology Cognition and Perception Seminar committee, 2014-2015
- NYU Dean's Undergraduate Research Fellowship selection committee, 2016-2017
- NYU Faculty of Arts and Sciences, Undergraduate Curriculum Committee, 2017-2020
- NYU CNS/CDS faculty search, 2019-2020
- NYU Neuroscience PhD Admissions committee, 2020-2021
- NYU Psychology Cognition and Perception Search Procedures Committee, 2020-2021
- NYU Center for Neural Science/Flatiron Institute faculty search, 2021
- NYU CNS Diversity, Equity, and Inclusion Committee, 2020-2021
- NYU Psychology Diversity, Equity, and Inclusion working group leader, 2020-2021
- NYU Psychology Higher Cognition search, 2023-2024
- ~50 dissertation committees (not counting own students)
- several tenure and promotion committees at NYU
- NYU Psychology Educational Policy Committee, 2014-present (except in 2021-2022)
- NYU Psychology Director of Undergraduate Studies, Sep 2019-present (except in 2021-2022)
- NYU CNS Director of Diversity, Equity, and Inclusion, 2023-present

Other professional service

- Cosyne Program Committee, 2012 and 2013
- Cosyne Diversity, Equity, and Inclusion Committee, 2019-2021
- Cognitive Science Society Elman Prize Committee, 2022-2023

Workshops and meetings organized

1. Breakout session "How do we design cognitive tasks that challenge both cognitive and neural network models?", Cognitive Computational Neuroscience 2019 (with Benjamin Peters)
2. Memorial symposium for David Knill, VSS 2015
3. Symposium on visual working memory, VSS 2013
4. Workshop on working memory, Portland OR, 2012 (with Edward Awh)
5. Workshop "Coding and computation in visual short-term memory", Cosyne 2012
6. Annual Conference of Gulf Coast Consortium for Theoretical and Computational Neuroscience, Houston, 2011-13 (with Kresimir Josic, Harel Shouval, Steve Cox)
7. Workshop "Bayesian inference in high-level perception", Cosyne 2010 (with Konrad Kording)
8. Workshop "Models of Multisensory Integration: Psychophysical and Neural Constraints", Cosyne 2006 (with Ladan Shams)

TALKS AND POSTERS

Invited talks (since 2007)

1. University of California San Diego, Psychology Colloquium, Jun 1, 2023
2. University of California San Diego, Neuroscience Graduate Program Seminar, May 31, 2023
3. University of Uppsala, Cognition and Perception Seminar, May 12, 2023,
4. Yale University, Foundations of Data Science Seminar, May 3, 2023
5. Yale University, Current Works in Cognitive Science, Nov 8, 2022
6. Indiana University, Cognitive Science Program, Nov 1, 2021
7. Max Planck Institute for Biological Cybernetics, May 17, 2021
8. Central European University, Feb 24, 2021
9. University of California Los Angeles, Cognitive Psychology Forum, Jan 15, 2021
10. Stanford University, Center for Mind, Brain, Computation, and Technology Seminar, Jan 11, 2021
11. Seoul National University, Oct 20, 2020
12. CUNY Graduate Center, Initiative for the Theoretical Sciences, Apr 17, 2020
13. Columbia University, Department of Psychology Seminar, Feb 24, 2020

14. Oxford University, Department of Experimental Psychology, Jan 16, 2020
15. University College London, Gatsby Computational Neuroscience Unit, Jan 15, 2020
16. DeepMind, Jan 14, 2020
17. Brown University, Millward Colloquium, Oct 16, 2019
18. Columbia University, Neurotheory seminar, Apr 12, 2019
19. Queens University, Centre for Neuroscience Studies, Nov 21, 2018
20. Keynote lecture at the "Object perception, attention, and memory" (OPAM) conference, New Orleans, Nov 15, 2018
21. Yale University, Current Work in Behavior, Genetics, and Neuroscience seminar series, Sep 21, 2018
22. Symposium celebrating the 30th anniversary of the Methods in Computational Neuroscience Summer School at the Marine Biology Laboratory in Woods Hole, Aug 23, 2018
23. Iakobachvili Faculty Science Award lecture 2018, New York University, May 5, 2018
24. Columbia University, Neuroscience Lecture Series, Teachers College, Feb 20, 2017
25. SUNY Optometry, Vision Research Colloquium Series, Jan 20, 2017
26. Harvard University, Center for Brain Science, Dec 13, 2016
27. University of Pennsylvania, Computational Neuroscience Initiative, Oct 31, 2016
28. University of Zurich, Neuroeconomics Seminar, Oct 20, 2016
29. Columbia University, Attention and Decisions Seminar, May 27, 2016
30. MIT, Department of Brain and Cognitive Sciences, Apr 22, 2016
31. New York University Shanghai, Institute of Brain and Cognitive Science, Mar 16, 2016
32. Boston University, Center for Systems Neuroscience, Feb 24, 2016
33. Radboud University Nijmegen, Donders Center Seminar Series, Jan 14, 2016
34. University of Amsterdam, Amsterdam Brain and Cognition, Jan 13, 2016
35. Rockefeller University, Department of Physics, Oct 13, 2015
36. Stanford University, Psychology Colloquium, Jun 3, 2015
37. University of Cambridge, Kenneth Craik Club, Sep 30, 2014
38. Radboud University Nijmegen, Donders Center Seminar Series, Jul 2014
39. University of California, Los Angeles, Department of Psychology, Jun 2014
40. Rutgers University, Perceptual Science Seminar, Feb 2014
41. University of Missouri, Department of Psychological Sciences, April 2013
42. Princeton University, Department of Psychology, March 2013
43. New York University, Center for Neural Science, March 2013
44. Princeton University, Princeton Neuroscience Institute, January 2013
45. Society for Industrial and Applied Mathematics, University of Houston Student Chapter, Nov 2012
46. Neuroeconomics Seminar, Center for Neuroeconomics, New York University, Oct 2012
47. Aspen Brain Forum "Cracking the neural code", Aspen CO, Aug 2012
48. Workshop on working memory, Portland OR, Aug 2012
49. Beijing University, Department of Psychology, Jul 2012
50. Workshop "Canonical neural computation", New York University, Florence, Italy, May 2012
51. City University of New York, Institute for Theoretical Sciences, "Brains, minds, and models" symposium, Apr 2012
52. New York University, Laboratory for Computational Vision, Apr 2012
53. Columbia University, Center for Theoretical Neuroscience, Neurotheory Seminar, Mar 2012
54. Yale University, Department of Neurobiology, Mar 2012
55. Gulf Coast Consortium, Keck seminar, Feb 2012
56. Baylor College of Medicine, Center for Computational and Integrative Biomedical Research Short Talks Series, Jan 2012
57. Rice University, Department of Psychology, Nov 2011
58. Massachusetts Institute of Technology, Department of Brain and Cognitive Sciences, Vision Seminar, Oct 2011
59. Free University Amsterdam, Department of Movement Sciences, Oct 2011
60. Netherlands Institute for Neuroscience, Oct 2011
61. University of Groningen, Department of Brain, Cognitive and Neurosciences, Oct 2011
62. Radboud University Nijmegen, Donders Institute for Brain, Cognition, and Behavior, Sep 2011
63. Max Planck Institute, Tübingen, Germany, Symposium on Multisensory Perception, Sep 2011

64. University of Rochester, Department of Brain and Cognitive Sciences, Feb 2011
65. Gulf Coast Consortium, Keck seminar, Apr 2010
66. Rice University, Department of Psychology, Jan 2010
67. University of Texas, Houston, Department of Neurobiology and Anatomy, Dec 2009
68. University of Texas, Austin, Center for Perceptual Systems, Nov 2009
69. University of Houston, Networks Seminar, Feb 2009
70. Washington University at St Louis, Department of Anatomy and Neurobiology, Jan 2009
71. GCC Theoretical and Computational Neuroscience Conference, Nov 2008
72. Rice University, Computational and Applied Mathematics, Oct 2008
73. Rice University, Department of Psychology, Sep 2008
74. Massachusetts Institute of Technology, Department of Brain and Cognitive Sciences, Vision Seminar, Jul 2008
75. University of California at San Diego, Department of Cognitive Science, Jan 2008
76. Baylor College of Medicine, Department of Neuroscience, Jan 2008
77. University of Groningen, Department of Behavioral, Cognitive and Neurosciences, Oct 2007
78. Columbia University, Center for Theoretical Neuroscience, June 2007
79. Cold Spring Harbor Laboratory, March 2007
80. University of California, San Francisco, Keck Center for Integrative Neuroscience, March 2007
81. University of California, Davis, Center for Neuroscience, Feb and April 2007
82. University of California, Los Angeles, Department of Psychology, Feb 2007
83. Northwestern University, Physical Medicine and Rehabilitation, March 2007
84. Wake Forest University, Department of Neurobiology and Anatomy, Jan 2007
85. Brandeis University, Volen Center for Complex Systems, Jan 2007

Conference and workshop talks

Cosyne: Computational and Systems Neuroscience

SfN: Annual meeting of the Society for Neuroscience

VSS: Annual meeting of the Vision Sciences Society

CCN: Cognitive Computational Neuroscience

CogSci: Annual Meeting of the Society for Cognitive Science

RLDM: Reinforcement Learning and Decision Making

1. Ili Ma, Camille V. Phaneuf, Bas van Opheusden, Wei Ji Ma, Catherine Hartley, *The Component Processes of Complex Planning Follow Distinct Developmental Trajectories*. CCN 2023
2. Ili Ma, Camille Phaneuf, Bas van Opheusden, Wei Ji Ma, and Catherine Hartley, *Distinct Developmental Trajectories In The Cognitive Components Of Complex Planning*. CogSci 2022.
3. Ili Ma, Camille Phaneuf, Bas van Opheusden, Wei Ji Ma, and Catherine Hartley, *Distinct Developmental Trajectories In The Cognitive Components Of Complex Planning*. RLDM 2022. Presented by Camille Phaneuf.
4. PI meeting of the Collaborative Research in Computational Neuroscience Grants, Oct 2021
5. *Studying complex planning using four-in-a-row*, CogSci 2021 Workshop “Using games to understand intelligence”
6. Jiawen Huang, Wei Ji Ma, and Christopher Baldassano, *Modeling schema development and its role in memory through 4-in-a-row, a two-player strategy game*. CogSci 2021 Workshop “Using games to understand intelligence”. Presented by Jiawen Huang.
7. Kuperwajs I, Ma WJ, *Planning to plan: a Bayesian model for optimizing the depth of decision tree search*. CogSci 2021. Presented by Ionatan Kuperwajs.
8. Ma I, Gureckis T, Ma WJ. *Information sampling for contingency planning*. CogSci 2021. Presented by Ili Ma.
9. *Planning in large state spaces*, Cosyne 2020
10. Sprague TC, Li HH, Yoo A, Rahmati M, Hallenbeck GE, Ma WJ, Curtis C, *Prioritized visual spatial working memory representations are maintained more precisely and with lower uncertainty*. SfN 2019. Presented by Tommy Sprague.
11. *Natural intelligence? Planning in a two-player combinatorial game*. Natural Environments, Tasks, and Intelligence (NETI) 2019, Austin TX.
12. *Efficient coding, resource rationality, and rational inattention: clarifying connections*. Cosyne 2019 Workshops.

13. Sprague TC, Yoo A, Rahmati M, Ma WJ, Curtis C, *Tracking the dynamics and uncertainty of visual spatial working memory representations across human cortex*. SfN 2018. Presented by Tommy Sprague.
14. Van Opheusden B, Galbiati G, Bnaya Z, Li Y, Ma WJ, *Expertise in sequential decision-making relies on attention and tree search*. Cosyne 2018 Workshops. Presented by Bas van Opheusden.
15. *Human confidence ratings are definitely not Bayesian and maybe not even that interesting*. Interdisciplinary Metacognition and Uncertainty Meeting, City University of New York, Nov 16, 2017.
16. *Normative models of attention*. Inaugural symposium of the Sloan-Nomis Program on Attentional and Perceptual Foundations of Economic Behavior, Oct 13, 2017
17. Orhan AE, Ma WJ, *When do neural networks learn sequential solutions in short-term memory tasks?* Computational and Cognitive Neuroscience 2017. Presented by Emin Orhan.
18. Li HH, Ma WJ, *Human confidence reports with multiple alternatives*. CCN 2017. Presented by Hsin-Hung Li.
19. Song M, Bnaya Z, Ma WJ, *History effects in a minimalistic explore-exploit task*. CCN 2017. Presented by Mingyu Song.
20. Denison R, Adler WT, Carrasco M, Ma WJ, *Humans flexibly incorporate attention-dependent uncertainty into perceptual decisions and confidence*. Cosyne 2017. Presented by Rachel Denison.
21. *Decision-making and confidence: probabilistic but not Bayesian?* Workshop "Uncertainty and action", Royal Society, Chicheley Hall, Oct 17, 2016
22. *A Fechnerian model of working memory confidence*. Annual Meeting of the Society for Mathematical Psychology, Aug 7, 2016. Presented by Ronald van den Berg
23. *Normative models of working memory and attention*. Annual Meeting of the Society for Mathematical Psychology, Aug 7, 2016
24. *Optimality and Bayesian inference in perceptual decision-making*. Workshop "The representation of value and economic choice", Columbia University, May 6, 2016
25. Van Opheusden B, Galbiati G, Bnaya Z, Li Y, Ma WJ, *Do people think like computers?* Computers and Games, Leiden, 2016; presented by Bas van Opheusden; video on <http://liacs.leidenuniv.nl/~csicga/cg2016/2.6.mov>
26. Shen S, Ma WJ, *A detailed comparison of optimality and simplicity in visual search*. VSS 2016
27. *Testing the Bayesian confidence hypothesis*, CoSyNe 2016 Workshops, March 1, 2016
28. *Stop arguing, start comparing models: the case for a pragmatic, though exhausting, approach to the Bayesian debate*, Workshop "Is the brain Bayesian?", NYU Center for Brain, Mind, and Consciousness, Dec 4, 2015
29. *Probabilistic reports of working memory for color*, Optical Society of America Fall Vision Meeting, San Jose, CA Oct 17, 2015
30. *The neural implementation of Bayesian inference*, SAMSI Program on Challenges in Computational Neuroscience Opening Workshop, Triangle Park NC, Aug 19, 2015
31. *Decoding memory uncertainty from visual cortex*, Advances in Memory Systems, NYU Center for Learning, Memory and Emotion, 2015
32. *Causal inference in multisensory perception*, Workshop "Combining information from multiple modalities across the animal kingdom", Janelia Research Campus, 2015
33. *Dave's work on mixture priors and causal inference*, David Knill Memorial Symposium, VSS 2015
34. *Testing the Bayesian confidence hypothesis*, MODVIS Satellite, VSS 2015
35. *Does working memory really have an item limit?* Hunter College Psychology Research Convention, 2015
36. *The limits of Bayesian causal inference in multisensory perception*. Cosyne 2015. Presented by Luigi Acerbi.
37. *Benchmark models*, Workshop on benchmarks in working memory, Emmetten, Switzerland, 2014
38. *Three short stories*. Modeling variability in neural populations, NYU, 2014
39. *The neural implementation of Bayesian inference*, Neural population dynamics for sensorimotor integration, Janelia Research Campus, 2014
40. *The neural implementation of Bayesian computation*, Symposium on cognitive models in neuroscience, Association for Psychological Science, San Francisco, 2014
41. *Rethinking the aperture problem: a story of competing priors*. VSS 2014. Presented by Edgar Walker.
42. *The representation of uncertainty in visual categorization*, NYU-Weizmann Institute of Science symposium "Frontiers in brain and cognition", 2014.
43. NSF Workshop "Linking language and cognition to neurobiology via computation", Washington DC, 2013

44. *Continuous resources and variable precision in working memory*. Symposium “The structure of visual working memory”, VSS 2013,
45. *Visual short-term memory resource is not shared among features*. VSS 2013. Presented by Hongsup Shin.
46. *Encoding precision in visual working memory*, Workshop on working memory, Portland OR, 2012.
47. *Variability in encoding precision accounts for the limitations of visual short-term memory*. VSS 2012
48. *Visual short-term memory limitations from variable neural resources*. Workshop “Coding and computation in visual short-term memory”, Cosyne 2012
49. *Complex but tractable generative models*. Workshop “Bayesian inference in high-level perception”, Cosyne 2010
50. *Metabolically constrained visual memory in multiple-object tracking*, Cosyne 2009
51. *The neural basis of optimal cue combination*. Workshop on Cue Combination, Rauschholzhausen, Germany, Oct 2008
52. *The neural basis of Bayes-optimal visual search*. SfN 2008
53. *Optimal computation with probabilistic population codes*. Workshop “Methods of Information Theory in Computational Neuroscience”, Computational Neurosciences 2007
54. *Bayesian decision-making with probabilistic population codes*, Workshop “Decision-Making”, Cosyne 2007
55. *Optimal computation with probabilistic population codes*. SfN 2006
56. *Bayesian inference as a unifying model for auditory-visual integration-segregation*, Workshop “Models of Multisensory Integration: Psychophysical and Neural Constraints”, Cosyne 2006

Conference posters

1. Nastaran Arfaei and Wei Ji Ma. *Planning with Others in Mind*. CCN 2023.
2. Ionatan Kuperwajs and Wei Ji Ma. *A Bayesian model for online meta-planning*. CCN 2023.
3. Jordan Lei and Wei Ji Ma. *Effect of Environmental Stochasticity on Planning Depth*. CCN 2023.
4. Jeroen Olieslagers and Wei Ji Ma. *A process model for human problem solving in puzzles*. CCN 2023.
5. Peiyuan Zhang, Yijun Lin, Falk Lieder, and Wei Ji Ma. *The Dynamic Nature of Procrastination*. CCN 2023.
6. Xiang Li, Luigi Acerbi, Wei Ji Ma. *Approximate inference through active computation accounts for human categorization behavior*. Cosyne 2023.
7. Dongjae Kim, Heiko Schütt, Wei Ji Ma. *Reward prediction error neurons implement an efficient code for reward*. Cosyne 2023.
8. Dongjae Kim, Sherry Dongqi Bao, Wei Ji Ma. *Undoing in human planning*. CogSci 2022.
9. Hsin-Hung Li and Wei Ji Ma. *A meta-inference model of confidence* CogSci 2022.
10. Peiyuan Zhang and Wei Ji Ma. *Effect of reward schedule and pressure on procrastination*. CogSci 2022.
11. Luisa Leonelli de Moraes, Peiyuan Zhang, Yijun Lin, Wei Ji Ma. *Procrastination and the attention-behavior gap*. CogSci 2022.
12. Zheyang (Sam) Zheng, Xinlei (Daisy) Lin, Jake Topping, Wei Ji Ma. *Comparing machine and human learning in a planning task of intermediate complexity*. CogSci 2022.
13. Dongjae Kim, Heiko Schütt, Wei Ji Ma. *Reward prediction error neurons implement an efficient code for reward*. CogSci 2022.
14. Ionatan Kuperwajs and Wei Ji Ma. *Understanding human decision-making in a complex planning task with large-scale behavioral data*. RLDM 2022
15. Ionatan Kuperwajs and Wei Ji Ma. *Planning to plan: a Bayesian model for optimizing the depth of decision tree search*. RLDM 2022
16. Zheyang (Sam) Zheng, Xinlei (Daisy) Lin, Jake Topping, Wei Ji Ma. *Comparing machine and human learning in a planning task of intermediate complexity*. RLDM 2022.
17. Ionatan Kuperwajs, Heiko Schütt, Wei Ji Ma. *Improving a model of human planning via large-scale data and deep neural networks*. RLDM 2022.
18. Dongjae Kim, Heiko Schütt, Wei Ji Ma. *Reward prediction error neurons implement an efficient code for reward*. RLDM 2022.
19. Peiyuan Zhang and Wei Ji Ma. *Designing a behavioral experiment to study the factors underlying procrastination*. CogSci 2021.
20. Aspen Yoo and Wei Ji Ma. *Optimal maintenance and use of uncertainty in visual working memory*. CCN 2019.

21. Xiang Li, Luigi Acerbi, Wei Ji Ma. *Approximate inference through active sampling of likelihoods accounts for Hick's law and decision confidence*. CCN 2019.
22. Pei-Yuan Zhang and Wei Ji Ma. *Procrastination in rational agents*. CCN 2019.
23. Christoph Blessing, Edgar Walker, Katrina Quinn, James Cotton, Wei Ji Ma, Andreas Tolias, Hendrikje Nienborg, Fabian Sinz. *Neural likelihood*. CCN 2019.
24. Jennifer Lee and Wei Ji Ma. *A representation-level algorithm for detecting spatial coincidences*. CCN 2019.
25. Heiko Schütt and Wei Ji Ma. *Dead rectangles as a stimulus for perceptual organization research*. CCN 2019.
26. Ionatan Kuperwajs, Bas van Opheusden, Wei Ji Ma. *Prospective planning and retrospective learning in a large-scale combinatorial game*. CCN 2019.
27. Yichen Li, Zahy Bnaya, Wei Ji Ma. *Predicting human decision in a sequential planning puzzle with a large state space*. CogSci 2019.
28. Xiang Li, Luigi Acerbi, Wei Ji Ma. *Approximate inference through sequential measurements of likelihoods accounts for Hick's law*. CogSci 2019.
29. Jennifer Lee and Wei Ji Ma. *Drawing conclusions from spatial coincidences: a cumulative clustering account*. CogSci 2019.
30. Thomas Sprague, Aspen Yoo, Masih Rahmati, Grace Hallenbeck, Wei Ji Ma, Clayton Curtis. *Prioritizing relevant information in visual working memory sculpts neural representations in retinotopic cortex to reduce their uncertainty*. VSS 2019.
31. Jonathan Winawer, Zeming Fang, Wei Ji Ma. *Normalization by the variance across orientation channels in human V1-V3*. VSS 2019.
32. Joshua Calder-Travis and Wei Ji Ma. *The effect of distractor statistics in visual search*. VSS 2019.
33. Andra Mihali and Wei Ji Ma. *The psychophysics of visual search with heterogeneous distractors: effects of set size, task, temporal order, and spacing*. VSS 2019
34. Edgar Walker, Andreas Tolias, R. James Cotton, Wei Ji Ma. *Macaque V1 population encodes trial-by-trial sensory uncertainty as likelihood function*. Cosyne 2019.
35. Mihali A, Young AG, Adler LA, Halassa M, Ma WJ, *Perceptual and executive behavioral deficits in ADHD and their differential correlation with microsaccade rate*. Society for Biological Psychiatry 2018.
36. Mihali A, Ma WJ, *The psychophysics of visual search with heterogeneous distractors: effects of set size, task, temporal order and stimulus spacing*. VSS 2018.
37. Winawer J, Fang Z, Ma WJ, *Normalization by the variance across orientation channels in human V1-V3*. VSS 2018.
38. Calder-Travis J, Ma WJ, *The effect of distractor statistics in visual search*. VSS 2018.
39. Sprague TC, Yoo AH, Rahmati M, Hallenbeck GE, Ma WJ, Curtis CE, *Prioritizing relevant information in visual working memory sculpts neural representations in retinotopic cortex to reduce their uncertainty*. VSS 2018.
40. Ma I, Sanfey A, Ma WJ, *Information sampling in trust decisions*. CCN 2017.
41. Acerbi L, Ma WJ, *Model fitting under uncertainty: a practical analysis of derivative-free optimization for cognitive and computational neuroscience*. CCN 2017.
42. Adler WT, Denison R, Carrasco M, Ma WJ, *When making confidence judgments, people take into account bottom-up and top-down stimulus uncertainty*. CCN 2017.
43. Yoo A, Klyszejko, Curtis C, Ma WJ, *Resource allocation and confidence in visual working memory*. CCN 2017.
44. Van Opheusden B, Bnaya Z, Li Y, Ma WJ, *Modeling decision tree search in a two-player game*. CCN 2017.
45. Mihali A, Young A, Halassa M, Adler L, Ma WJ, *Characterizing behavior and microsaccades in ADHD using a mixed sensory-executive psychophysical paradigm*. CCN 2017.
46. Bnaya Z, Ma WJ, *Suboptimality and metacognition in human sequential planning*. CCN 2017.
47. Zhou Y, Acerbi L, Ma WJ, *The role of uncertainty in perceptual organization*. CCN 2017.
48. Ni L, Ma WJ, *Modeling interference in the N-back task*. CCN 2017.
49. Ma WJ, Van den Berg R, *An ecologically rational explanation for set size effects*. CCN 2017.
50. Li Z, Ma WJ, *Valuation as inference: a new model for the effects of fixation on choice*. CCN 2017.
51. Galbiati G, Li Y, Van Opheusden B, Ma WJ, *Modeling experience and time pressure in human gameplay*. Cosyne 2017
52. Norton E, Acerbi L, Ma WJ, Landy MS, *Changing prior probability in perceptual decision-making*. Cosyne 2017
53. Van Opheusden B, Acerbi L, Ma WJ, *Unbiased log likelihood estimation with inverse binomial sampling*. Cosyne 2017

54. Yoo AH, Acerbi L, Orhan AE, Ma WJ, *The role of memory uncertainty in change detection*. VSS 2016
55. Honig M, Fougne D, Ma WJ, *Probabilistic information in working memory*. VSS 2016
56. Bnaya Z, Van Opheusden B, Galbiati G, Ma WJ, *Do people think like computers?* Symposium on Combinatorial Search, Tarrytown NY, 2016
57. Bnaya Z, Van Opheusden B, Galbiati G, Ma WJ, *Do people think like computers?* Conference on Thinking, Providence RI, 2016
58. Van Opheusden B, Galbiati G, Bnaya Z, Ma WJ, *Do people think like computers?* Cosyne 2016
59. Stolarczyk S, Bassler K, Bhardwaj M, Ma WJ, Josic K, *Optimal decision making in social networks*. Cosyne 2016
60. Orhan AE, Ma WJ, *The inevitability of probability: probabilistic inference in generic neural networks*. Cosyne 2016
61. Honig M, Ma WJ, Fougne D. *Probabilistic information is stored in visual working memory*. Workshop on Object Perception, Attention, and Memory 2015
62. Jackson S, Ma WJ. *Memory precision in a contrast estimation task*. SfN 2015
63. Walker EY, Cotton RJ, Tolias AS, Ma WJ. *Uncertainty decoded from population activity in macaque primary visual cortex is used in visual decisions*. SfN 2015
64. Acerbi L, Holland T, Ma WJ. *The limits of Bayesian causal inference in audio-visual multisensory perception*. Workshop "Combining information from multiple modalities across the animal kingdom, Janelia Research Campus, 2015
65. Mihali A, Van Opheusden B, Ma WJ. *Bayesian microsaccade detection*. VSS 2015
66. Shin H, Ma WJ, *Visual working memory for irrelevant features in multi-feature objects*. VSS 2015
67. Adler W, Ma WJ *Towards a quantitative model of confidence: Testing the Bayesian Confidence Hypothesis*. Cosyne 2015
68. Acerbi L, Ma WJ, Vijayakumar S, *A framework for testing the identifiability of Bayesian models of perception*. Neural Information Processing systems 2014.
69. De Silva N, Ma WJ, *The optimal allocation of attentional resource*. Cosyne 2014
70. Orhan AE, MA WJ, *Neural population coding of multiple stimuli*. Cosyne 2014
71. Shen S, Ma WJ, *Optimality, not simplicity governs visual decision-making*. Cosyne 2014
72. Carroll, S, Bhardwaj M, Ma WJ, Josic K, *Visual decisions in the presence of measurement and stimulus correlations*. Cosyne 2014
73. Ma WJ, Cotton RJ, Walker E, Prezhdo E, Tolias A, *Visual categorization under variable uncertainty*. Meeting of the NSF CRCNS grant recipients, 2013
74. Shen S, Van den Berg R, Ma WJ, *When is sensory precision variable?* Cosyne 2013
75. Bhardwaj M, Van den Berg R, Ma WJ, Josic K, *Do humans account for stimulus correlations in visual perception?* Cosyne 2013
76. Shin H, Van den Berg R, Ma WJ, *Independent pools of visual short-term memory resource for different features*. Cosyne 2013
77. Zaidel A, Ma WJ, Angelaki D, *Supervised cue calibration relies on the multisensory percept*. Cosyne 2013
78. Marsden KE, Ma WJ, Deci EL, Ryan RM, Chiu PH, *Neural predictors of intrinsic drive and the impact of extrinsic motivators*. SfN 2012
79. Zaidel A, Ma WJ, Angelaki D, *Bayesian cue calibration relies on the multisensory percept*. SfN 2012
80. Ma WJ, Tolias A, *Observers use knowledge of sensory uncertainty during classification*. Meeting of the NSF CRCNS grant recipients, 2012
81. Elmore LC, Ma WJ, Magnotti JF, Leising KJ, Passaro AD, Katz JS, Wright AA, *Visual short-term memory compared in pigeons, rhesus monkeys, and humans*. International Conference on Comparative Cognition 2012
82. Shin H, Van den Berg R, Ma WJ, *Change localization: a new paradigm for visual short-term memory*. Cosyne 2012
83. Mazyar H, Van den Berg R, Ma WJ, *On the precision of sensory encoding in visual search*. Cosyne 2012
84. Keshvari S, Van den Berg R, Ma WJ, *Change detection as probabilistic inference under variable resources*. Cosyne 2012
85. Van den Berg R, Beck JM, Ma WJ, *Scientists are suboptimal in judging scientific data*. Cosyne 2012
86. Van den Berg R, Chou WC, George R, Ma WJ, *Short-term memory limitations from variable neural resources*. SfN 2011
87. George R, Qamar A, Beck JM, Cotton RJ, Tolias AS, *Optimal integration of top-down and bottom-up uncertainty in humans, monkeys, and neural networks*. Cosyne 2011

88. Ma WJ, van den Berg R, Chou WC, George R, *Variable, continuous resources in short-term memory*. Cosyne 2011
89. Van den Berg R, Vogel M, Josic K, Ma WJ, *Probabilistic inference of perceptual relationships*. Cosyne 2011
90. Ma WJ, Chou WC, *Beyond magical numbers: towards a noise-based account of visual short-term memory limitations*. VSS 2010
91. Ma WJ, Chou WC, *Beyond magical numbers: towards a noise-based account of visual short-term memory*. Cosyne 2010
92. Beck JM, Ma WJ, Navalpakkam V, *Bayesian theory of visual search*. VSS 2008
93. Beck JM, Ma WJ, Navalpakkam V, Pouget A, *Exact and approximate solutions for marginalization with probabilistic population codes*. Cosyne 2008
94. Ma WJ, Navalpakkam V, Beck JM, *Bayesian theory of visual search*. Cosyne 2008
95. Ma WJ, Zhou X, Parra LC, *Auditory-visual speech recognition is consistent with Bayes-optimal cue combination*. Cosyne 2008
96. Ma WJ, Beck JM, Pouget A, *Noise as incompetence*. SfN 2007
97. Ma WJ, Beck JM, Pouget A, *Bayesian decision-making with probabilistic population codes*. Cosyne 2007
98. Beck JM, Ma WJ, Pouget A, *Linear Fisher information in a network of LNP spiking neurons*. Cosyne 2007
99. Bejjanki V, Ma WJ, Beck JM, Pouget A, *Perceptual learning as improved Bayesian inference in early sensory areas*. Cosyne 2007
100. Kording K, Beierholm U, Ma WJ, Quartz S, Tenenbaum J, Shams L, *Causal inference in cue combination*. Cosyne 2007
101. Ma WJ, Beck JM, Latham PE, Pouget A, *Bayesian inference with probabilistic population codes: simulations in a network of conductance-based integrate-and-fire neurons*. Cosyne 2006
102. Beck JM, Ma WJ, Latham PE, Pouget A, *Bayesian inference with probabilistic population codes: theory*. Cosyne 2006
103. Rothkopf C, Ma WJ, Latham PE, Bavelier D, Pouget A, *Learning rules for unsupervised perceptual learning*. Cosyne 2005
104. Ma WJ, Wilken P, *A signal detection account of visual short-term memory for orientation and spatial frequency*. VSS 2004
105. Shams L, Ma WJ, *Optimality of segregation/integration of auditory and visual signals in the human brain*. VSS 2004
106. Ma WJ, Shams L, *Bayesian inference in auditory-visual segregation and integration*. Computational and Systems Neuroscience, Cold Spring Harbor, 2004
107. Shams L, Ma WK, Smith G, *Humans integrate auditory and visual information in a statistically optimal fashion*. International Multisensory Research Forum 2003