Feb 2022

Atsushi Kikumoto (菊本 篤史)

Department of Cognitive, Linguistic, Psychological Sciences, Brown University

RIKEN Center for Brain Science

JSPS overseas fellow

atsushi_kikumoto@brown.edu

Education

2013 – 2020	PhD, Psychology and Cognitive Neuroscience University of Oregon, Eugene, OR
2009 – 2012	Bachelor of Science, Psychology (honors), Biology (minor), University of Oregon, Eugene, OR
2008 – 2010	The Associate of Arts Oregon Transfer (AAOT), Lane Community College, Springfield, OR

Research Experience

2020 – present	Postdoctoral Research Associate (2020), Visiting scholar (2021-2022) Brown University, Providence, RI, United States Director: David Badre
2021 – present	Postdoctoral Researcher RIKEN Center for Brain Science, Wako, Saitama, Japan Director: Kazuhisa Shibata
2010 – 2020	Research assistant / PhD Graduate Student Researcher University of Oregon, Eugene, OR, United States Director: Ulrich Mayr
2018	Visiting Junior Scholar Max Planck Institute of Human Development, Berlin, Germany Director: Ulman Lindenberger, Markus Werkle-Bergner, and Myriam Sander
2010 – 2012	Research assistant University of Oregon, Eugene, OR, United States Director: Ed Vogel
2010 – 2012	Research assistant University of Oregon, Eugene, OR, United States Director: Margaret Sereno

Publications (* denotes that authors contributed equally to the work)

Kikumoto, A., Sameshima, T., & Mayr, U. (2022). The Role of Conjunctive Representations in Stopping Actions. *Psychological Science*, 9567976211034505.

Badre, D., Bhandari, A., Keglovits, H., & **Kikumoto, A**. (2021). The dimensionality of neural representations for control. *Current Opinion in Behavioral Sciences*, *38*, 20–28.

Kikumoto, A., & Mayr, U. (2020). Conjunctive representations that integrate stimuli, responses, and rules are critical for action selection. *Proceedings of the National Academy of Sciences of the United States of America*. https://doi.org/10.1073/pnas.1922166117

Sereno, M. E., Robles, K. E., **Kikumoto, A.**, & Bies, A. J. (2020). The Effects of Three-Dimensional Context on Shape Perception. *Psychological Science*, 956797620901749. doi:10.1177/0956797620901749

Moss, M. E., **Kikumoto, A.**, & Mayr, U. (2020). Does conflict resolution rely on working memory? *Journal of Experimental Psychology. Learning, Memory, and Cognition*. doi:10.1037/xlm0000801
Winner of 2021 Early Career Contribution Award of APA's oSciety for Experimental Psychology and Cognitive Science.

Kikumoto, A., & Mayr, U. (2019). Balancing model-based and memory-free action selection under competitive pressure. *eLife*, *8*. doi:10.7554/eLife.48810

Hubbard, J*., **Kikumoto, A*.**, & Mayr, U. (2019). EEG Decoding Reveals the Strength and Temporal Dynamics of Goal-Relevant Representations. *Scientific Reports*, *9*(1), 9051. doi:10.1038/s41598-019-45333-6

Kikumoto, A., & Mayr, U. (2018). Decoding hierarchical control of sequential behavior in oscillatory EEG activity. *eLife*, *7*. doi:10.7554/eLife.38550

Kikumoto, A., & Mayr, U. (2017). The nature of task set representations in working memory. *Journal of Cognitive Neuroscience*, *29*(11), 1950–1961. doi: 10.1162/jocn_a_01173

Kikumoto, A., Hubbard, J., & Mayr, U. (2015). Dynamics of task-set carry-over: evidence from eye-movement analyses. *Psychonomic bulletin & review*, 1-8. doi:10.3758/s13423-015-0944-y

Mayr, U., Kleffner-Canucci, K., **Kikumoto, A.**, & Redford, M.A. (2014), Control of task sequences: What is the role of language? *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 40(2). doi:10.1037/a0035221

Publications in preparation

Kikumoto, A., Bhandari, A., Shibata, K. & Badre, D (in prep). Stable and high-dimensional geometry of representations for action execution.

Kikumoto, A., Bhandari, A., Shibata, K. & Badre, D (in prep). Conjunctions with salient task-irrelevant inputs facilitate action selection.

Kikumoto, A., Mayr, U., & Badre, D (in prep). The role of conjunctive representations in prioritizing and gating of planned actions.

Tsubomi, H., Fukuda, K., **Kikumoto, A.**, Mayr, U., & Vogel, E (in prep). Dropping no-longer necessary items from visual working memory.

Invited Talks

Kikumoto, A., Bhandari, A., Shibata, K., Mayr, U., Badre D. (2021, Nov). “Dynamic Integrated representations during action selection”, Presentation at University of Washington, Missouri, U.S.

Kikumoto, A., Badre D., Mayr, U. (2020, May). “The content and format of control representation during dynamic action control”, Presentation at University of California Berkeley, California, U.S.

Kikumoto, A., Byers A., Mayr, U. (2018, April). “Towards optimal competitive behavior: wins versus losses determine model-based versus random choices in competitive task switching”, Presentation at University of Kansei Gakuin, Kyoto, Japan.

Kikumoto, A., Tsubomi, H., Fukuda, K. & Mayr, U. (2017, August). “Tracking individual representation in visual working memory”, Presentation at Max Planck Research Institute for Human Development, July 2017, Berlin, Germany.

Kikumoto, A., & Mayr, U. (2013, August). “Nature of task set carry-over”, Primate Research Institute Kyoto University, Kyoto, Japan.

Conference Talks

Kikumoto, A. & Mayr, U. (2019). “The role of conjunctive representations in stopping actions”. Psychonomic Society, November 2019, Montreal, QC, Canada.

Kikumoto, A. & Mayr, U. (2019). “Conjunctions between rules and stimulus-response codes drive action selection”. Control Processes, May 2019, Providence, RI, USA.

Kikumoto, A. & Mayr, U. (2018). “The nature of rule-based action selection”. Psychonomic Society, November 2018, New Orleans, LA, USA.

Kikumoto, A. & Mayr, U. (2018). “Probing the nature of task-set representations”. Presentation for Experimental Psychology Society, January 2018, London, UK.

Kikumoto, A. & Mayr, U. (2017). “Competitive task switching: balancing model-based and memory-free action selection”. Psychonomic Society, November 2017, Vancouver, BC, Canada.

Kikumoto, A. & Mayr, U. (2014). “Using the contralateral delay activity to probe the nature of task set representations”, Presentation for the Psychonomic Society, November 2014, Long Beach, CA, USA.

Dungan, J.B., **Kikumoto, A.** & Vogel, E.K. (2012). “Stability of visual working memory representations across changes in eye positions”, Presentation for the Cognitive Science Association for Interdisciplinary Learning (CSAIL), August 2012, Hood River, OR, USA.

Conference Poster Presentations

Kikumoto, A., Sameshima, T. & Mayr, U. (2019). “How does stopping of actions affect action-relevant representations?”, Poster for the Cognitive Neuroscience Society, March 2019, San Francisco, CA, USA.

Kikumoto, A., Sameshima, T. & Mayr, U. (2018). “Sticky rules: conjunctions between rules and stimulus-response Codes Drive Action Selection”, Poster for the Cognitive Neuroscience Society, March 2018, Boston, MA, USA.

Tsubomi, H., Fukuda, K., **Kikumoto, A.**, Mayr, U. & Vogel, E. (2018). “Removal of no-longer necessary items from working memory after task accomplishment”, Poster for the Psychonomic Society, November 2015, Louisiana, LA, USA.

Moss, M., **Kikumoto, A.** Mayr, U. (2018). “Efficient coding of abstract inter-chunk relationship”, Poster for the Psychonomic Society, November 2015, Louisiana, LA, USA.

Kikumoto, A., Corona,C., Karpf, J. & Mayr, U. (2017). “Towards optimal competitive behavior: wins versus losses determine model-based versus random choices in competitive task switching”, Poster for the Cognitive Neuroscience Society, March 2017, San Francisco, CA, USA.

Moss, M., **Kikumoto, A.** & Mayr, U. (2017). “Do working memory and conflict resolution share common cognitive resources”, Poster for the Cognitive Neuroscience Society, March 2017, San Francisco, CA, USA.

Bies, A., **Kikumoto, A.**, Lazarides, S., & Sereno, M. (2017). “Shape constancy in anaglyphs: Effects of angle, context and instruction”, Poster for Vision Science Society, May 2017, FL, USA.

Kikumoto, A., Schäfer, T., Sameshima, T., Anderson, D., McGuirk, W. & Mayr, U. (2016). “Mapping out the representational space for decision using EEG delta oscillations”, Poster for the Cognitive Neuroscience Society, November 2016, NewYork, NY, USA.

Morales, P.J., Hubbard, J., **Kikumoto, A**. & Mayr, U. (2016). “Probability contexts modulate mediofrontal prediction error signals in response to gains and losses”. Poster for the Cognitive Neuroscience Society, November 2016, NewYork, NY, USA.

Bies, J. A., **Kikumoto , A**., Boydstonb, R., Greenfielda. A., Chauvina, A., Taylor. R., & Sereno, M., (2016). “Percepts from noise patterns: The role of fractal dimension in object pareidolia”, Poster for Vision Science Society, May 2016, FL, USA.

Kikumoto, A., Corona,C., Sameshima, T. & Mayr, U. (2015). “Decoding hierarchical representations of complex sequences from EEG oscillatory activity”, Poster for the Psychonomic Society, November 2015, Chicago, IL, USA.

Tsubomi, H., Fukuda, K., **Kikumoto, A.** & Vogel, E. (2015). “Forgetting no-longer necessary items from visual working memory”, Poster for the Psychonomic Society, November 2015, Chicago, IL, USA.

Jost, K., Mayr, U., **Kikumoto, A.** & Schwarzkopp, T. (2015). “Visual working memory and filtering out distractors: evidence for an age-specific delay in filtering”. Poster for the Cognitive Neuroscience Society, May 2015, San Francisco, CA, USA.

Kikumoto, A., Williams, L., Robson, S. & Mayr, U. (2014). “Using the contralateral delay activity to probe the nature of task set representations”, Poster for the Cognitive Neuroscience Society, March 2015, San Francisco, CA, USA.

Hubbard, J., **Kikumoto, A.** & Mayr, U. (2014). “Puppilometric indicator of proactive control in task-switching”, Poster for the Psychonomic Society, November 2014, Long Beach, CA, USA.

Dungan, J.B., **Kikumoto, A.** & Vogel, E.K. (2012). “Stability of visual working memory representations across changes in eye positions”, Poster for the Society for the Neuroscience (SfN), August 2012, New Orleans, LA, USA.

Dungan, J.B., **Kikumoto, A.** & Vogel, E.K., (2012). “Stability of visual working memory representations across changes in eye positions”, Poster for the Society for the Neuroscience (SfN), August 2012, New Orleans, LA.

Kikumoto, A. & Mayr, U. (2011). “Passive listening to music engages executive control”, Poster for the NorthWest Cognition & Memory (NOWCAM), May 2011, Vancouver, BC, USA.

Awards, Scholarships, and Fellowships

2021: JSPS Overseas Fellowships (Japan Society for Promotion of Science, $12,556,000)

2019: Graduate Student Travel Award (University of Oregon, $500)

2018: Pre-doctoral stipend of Max Planck Society (Max Planck Institute of Human Development)

2017: Gregores Research Award (University of Oregon, $500)

2014: Graduate Student Award for the Cognitive Neuroscience Society

2011: Best Poster Presentation Award for the Northwest Cognitive & Memory

2009: International Deans Excellence Award Scholarship (University of Oregon, $24,000)

2008: Shining Star Scholarship (Lane Community College, $1000)

Grant Funding

2021-2026 NIH (NIMH) R01 Grant Human prefrontal representational geometry and cognitive control function. (Role: Co-Investigator; PI: David Badre, Stefano Fusi & Ulrich Mayr)

Teaching and Mentorship

2017	Teaching assistant and lab instructor for PSY302: Statistical method
2016	Teaching assistant for PSY449/549: Human Neuropsychology
2016	Teaching assistant and guest lecture for PSY438/538: Perception
2015	Teaching assistant for PSY436/536: Human performance
2014	Teaching assistant for PSY202: Mind and Brain
2008 – 2010	Psychology tutor with the CRLA Advanced level tutor certificate

Mentoring

2020 – 2021	RIKEN Center of Brain Science: Narumi Sugihara, Sara Matsui
2013 – 2019	University of Oregon, graduate student mentor for honors thesis program: Chihoko Hayashi, Lauren Williams, Dagger Anderson, Caitlin Corona, Megan Carson, Tesufuai Sameshima, Ali Byers, Izabella Dickerson, Vy Tran

Ad Hoc Journal Reviewing

Cognition, Neuron, eLife, Psychonomic Bulletin & Review

Training

2018: fsl course for neuroimaging analysis at University of Oxford

2017: Model-based neuroscience summer school at University of Amsterdam