Curriculum Vitae Jan 2023

Atsushi Kikumoto (菊本 篤史), Ph.D.

Email: atsushi_kikumoto@brown.edu

Postdoctoral Research Associate
Department of Cognitive, Linguistic, Psychological Sciences, Brown University
190 Thayer Street, Providence, RI 02906

Education

2013 – 2020	PhD, Psychology and Cognitive Neuroscience University of Oregon, 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 and Employment

2020 – present	Postdoctoral Research Associate with Dean's Faculty Fellowship JSPS Overseas Fellow Postdoctoral Research Associate Brown University, Providence, RI, U.S. Mentor: **David Badre**
2021 – present	Postdoctoral Researcher Visiting Scholar RIKEN Center for Brain Science, Wako, Saitama, Japan Mentor: **Kazuhisa Shibata**
2010 – 2020	Ph.D. Graduate Student Researcher University of Oregon, Eugene, OR, U.S. Mentor: **Ulrich Mayr**
2018	Visiting Junior Scholar Max Planck Institute of Human Development, Berlin, Germany Director: **Ulman Lindenberger** and **Markus Werkle-Bergner**
2010 – 2012	Research assistant University of Oregon, Eugene, OR, U.S. Mentor: **Ed Vogel**
2010 – 2012	Research assistant University of Oregon, Eugene, OR, U.S. Mentor: **Margaret Sereno**

Competitive Research Funding

2021-2026	NIH (NIMH) R01 Grant, 5R01MH125497-02, The organization of neural representations for flexible behavior in human brain. (Role: Co-Investigator; PI: David Badre)

2020-2022 JSPS KAKENHI Grants-in-Aid for Transformative Science Area (A), 20B102, Breakthrough in the limits of brain, mind and body. (Role: Co-Investigator; PI: Kazuhisa Shibata)
2018-2019 JSPS KAKENHI Grants-in-Aid for Challenging Research (Pioneering / Exploratory), 18K18690, Assessment of iconic memory using time-frequency analysis with EEG. (Role: Co-Investigator; PI: Hiroyuki Tsubomi)
2017-2022 NSF R01 Grant, Z3FGN9MF92U2, Hierarchical control of sequential skills: Using EEG to decode the underlying representations. (PI: Ulrich Mayr)

Fellowships, Awards and Scholarships

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)

Research Papers (* denotes that authors contributed equally to the work)

Kikumoto, A., Mayr, U., Badre, D. (2022). The role of conjunctive representations in prioritizing and selecting planned actions. *eLife*, 11.

Kikumoto A., Sameshima T, Mayr U. The Role of Conjunctive Representations in Stopping Actions. Psychol Sci. 2022 Feb;33(2):325-338.

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*, *117*(19), 10603–10608.

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

Moss, M. E., **Kikumoto, A.**, & Mayr, U. (2020). Does conflict resolution rely on working memory? *Journal of Experimental Psychology: Learning, Memory, and Cognition, 46*(12), 2410–2426. (Winner of the 2021 Early Career Contribution Award of APA's Society for Experimental Psychology and Cognitive Science)

Kikumoto, A., & Mayr, U. (2019). Balancing model-based and memory-free action selection under competitive pressure. *eLife*, *8*. (* Highlighted as the eLife Science Digest)

Hubbard, J*., **Kikumoto, A*.**, & Mayr, U. (2019). EEG Decoding Reveals the Strength and Temporal Dynamics of Goal-Relevant Representations. *Scientific Reports*, *9*(1), 9051.

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

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

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

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).

Manuscripts

Tsubomi, H., Fukuda, K., **Kikumoto, A.**, Mayr, U., & Vogel, E (submitted). Task termination triggers spontaneous clearance of visual working memory.

Kikumoto, A., Bhandari, A., Shibata, K. & Badre, D (in prep). Conjunctive control representations expressed in a temporally stable and high-dimensional geometry lead to efficient action selection.

Kikumoto, A., Shibata, K., Nishio, T. & Badre, D (in prep). The effects of practice and consolidation on the integrated control representations.

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

Conference Talks and Symposia

Kikumoto, A., Bhandari, A., Mayr, U., Shibata, K., & Badre, D. (2022). “Stability and dimensionality of action representations during selection”. Control Processes, May 2022, Virtual meeting, USA.

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.

Other Conference Abstracts

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.

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.

Teaching

2022	BrainStorm Computational Modeling in EEG workshop and Datathon, Tutor
2017	PSY302: Statistical method, Teaching assistant and lab instructor
2016	PSY449/549: Human Neuropsychology, Teaching assistant
2016	PSY438/538: Perception, Teaching assistant and guest lecturer
2015	PSY436/536: Human performance, Teaching assistant
2014	PSY202: Mind and Brain, Teaching assistant
2008 – 2010	Psychology tutor with the CRLA Advanced level tutor certificate

Supervision and Mentoring

2020 – 2021	Brown University: Defne Buyukyazgan, Sophie Poellnitz, Alexis Peetz Alio, Machaela Cruz
2020 – 2021	RIKEN Center of Brain Science: Narumi Sugihara, Sara Matsui, Homma Saki
2013 – 2019	University of Oregon: Chihoko Hayashi, Lauren Williams, Selina Robson, Dagger Anderson, Caitlin Corona, Megan Carson, Tesufuai Sameshima, Ali Byers, Izabella Dickerson, Min Zhang, Jiafan Jia, Vy Tran

Mentored or co-mentored the following undergraduate thesis projects:

2020-2021	Clark honors college thesis: Is Competitive Pressure Necessary for Loss-Induced Random Behavior? (Ali Byers), University of Oregon, USA
2018-2019	Departmental honor thesis: Is Efficient Coding a Cognitive Primitive of Working-Memory Capacity? (Izabella Dickerson), University of Oregon, USA
2018-2019	Departmental honor thesis: The Effect of Abstract Chunk Patterns on Sequential Performance (Min Zhang), University of Oregon, USA
2016-2017	Departmental honor thesis: The Modulation of Perceptual Weights Facilitated by the Expectations of Forthcoming Evidence (Tesufuai Sameshima), University of Oregon, USA
2016-2017	McNair research program (Megan Carson), University of Oregon, USA
2015-2016	Departmental honor thesis: Musical Boundaries and Task Switching (Caitlin Corona), University of Oregon, USA
2014-2015	Departmental honor thesis: Is There a Spatial Code in Abstract Sequences? (Dagger Anderson), University of Oregon, USA
2011-2012	Departmental honor thesis: Competition, Inhibition, and Voluntary Task Control (Chihoko Hayashi), University of Oregon, USA

Outreach Service Activities

2008 – 2010	Volunteer peer-to-peer tutor at Lane community college
2017	Graduate representative to a search committee

Ad Hoc Journal Reviewing

Cognition, Psychonomic Bulletin & Review, Neuron, eLife, Journal of Neuroscience, Journal of Cognitive Neuroscience, Journal of Experimental Psychology: Learning, Memory & Cognition

Training

2018: fsl course for neuroimaging analysis at University of Oxford
2017: Model-based neuroscience summer school at University of Amsterdam