

Seongmin A. Park, PhD

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Assistant Project Scientist, University of California, Davis, USA

Education

- Aug.2007. - Feb. 2012 PhD in Culture Technology, Graduate school of Culture Technology (GSCT), KAIST (Korea Advanced Institute of Science and Technology), Daejeon, South Korea.
 Dissertation: *Neural Underpinnings of Factors influencing Aesthetic Judgment of Artworks*, Advisor: Prof. Jaeseung Jeong; Reading Committees: Profs. Jun Yong Noh, Woon-Seung Yeo, Yi Kyung Kim, and Chai-Youn Kim
- Sep.2005. - Aug. 2007 M.S. in Culture Technology, GSCT, KAIST, Daejeon, South Korea.
- Feb.2001. - Aug. 2005 B.S. in Digital Media, Ajou University, Suwon, South Korea.

Working Experiences

- Feb. 2019 – present Assistant Project Scientist in Center for Mind and Brain and Center for Neuroscience, University of California, Davis, USA, Learning and Decision-Making Lab, Dr. Erie D. Boorman
- Feb. 2017 –Jan. 2019 Senior postdoctoral research fellow in Center for Mind and Brain, University of California, Davis, USA, Learning and Decision-Making Lab, Dr. Erie D. Boorman
- Feb. 2016 - Feb. 2016 Twin fellow in Hanse-Wissenschaftskolleg, Institute for Advanced Study, Delmenhorst, Germany
- Oct. 2012 – Jan. 2017 Postdoctoral research fellow in ISC-MJ., UMR 5229, CNRS, Bron, France, Neuroeconomics Laboratory, Dr. Jean-Claude Dreher

Teaching Experiences

- 2019 – 2022 Assisting supervision of 3 PhD student in Psychology program, University of California, Davis
- 2018 - 2021 Guest lecture in Topics in Neuroeconomics class, “*Strategic decision-making*”, University of California, Davis
- 2013 – 2017 Assisting supervision of 4 Master students in Neuroscience program and 1 Postdoctoral researcher, CNRS
- 2011 Assisting supervision of 2 Master students in GSCT, KAIST
- 2005 - 2009 Teaching Assistant, “*Human cognition in perception*”, and “*Human computer interactions*”, KAIST

Publications

Published Journal Refereed Articles

- 2022 Jordan Crivelli-Decker, Alex Clarke, **Seongmin A. Park**, Derek J. Huffman, Erie D. Boorman, Charan Ranganath, *Goal-centered representations in the human hippocampus*
Nature Communications (In press)

- 2022 Phillip P. Witkowski, **Seongmin A. Park**, Erie D. Boorman, *Neural mechanisms of credit assignment for inferred relationships in a structured world* **Neuron** 110, 1–11
- 2021 **Seongmin A. Park**, Douglas S. Miller, Erie D. Boorman *Novel inferences in a multidimensional social network use a grid-like code*, **Nature Neuroscience** 24, 1292–1301
- 2021 **Seongmin A. Park**, Douglas S. Miller, Erie D. Boorman, *Protocol for building a cognitive map of structural knowledge in humans by integrating piecemeal learned abstract relationships from separate experiences*, **STAR Protocols**, 2(2), 100423
- 2021 Erie D. Boorman, Phil P. Witkowski, Yanchang Zhang, **Seongmin A. Park**, *The orbital frontal cortex, task structure, and inference*, **Behavioral Neuroscience**, 135 (2), 291
- 2021 Erie D. Boorman, Sarah C. Sweigart, **Seongmin A. Park**, *Cognitive maps and novel inferences: a flexibility hierarchy*, **Current Opinion in Behavioral Sciences**, 38, 141-149
- 2020 **Seongmin A. Park**, Douglas S. Miller, Hamed Nili, Charan Ranganath, Erie D. Boorman *Map making: constructing, combining, and inferring on abstract cognitive maps*, **Neuron**, 107 (6), 1-13
- 2019 Koosha Khalvati, **Seongmin A. Park**, Saghar Mirbagheri, Remi Philippe, Mariateresa Sestito, Jean-Claude Dreher, Rajesh P.N. Rao *Modeling Other Minds: Bayesian Inference Explains Human Choices in Group Decision Making*, **Science Advances**, 5 (11), eaax8783
- 2019 **Seongmin A. Park**, Mariateresa Sestito, Erie D. Boorman, Jean-Claude Dreher, *Neural computations underlying strategic social decision-making in groups*, **Nature Communications**, 10 (1), 1-12
- 2018 Romuald Girard, Ignacio Obeso, Stéphane Thobois, **Seongmin A. Park**, Tiphaine Vidal, Emilie Favre, Miguel Ulla, Emmanuel Broussolle, Paul Krack, Franck Durif, Jean-Claude Dreher, *Wait and you shall see: sexual delay discounting in hypersexual Parkinson's disease*, **Brain** 142 (1), 146–162
- 2017 **Seongmin.A. Park**, Sidney Goïame, David A. O'Connor, Jean-Claude Dreher, *Integration of individual and social information for decision-making in groups of different sizes*, **PLoS Biology**, 15.6 (2017): 15 (6), e2001958
- 2015 **Seongmin A. Park**, Kyongsik Yun, and Jaeseung Jeong, *Reappraising Abstract Paintings after Exposure to Background Information*, **PLoS ONE**, 10(5): e0124159
- 2013 **Seongmin A. Park**, Soyeong Jeong and Jaeseung Jeong, *TV programs that denounce unfair advantage impact women's sensitivity to defection in the Public goods game*, **Social Neuroscience**, 8(6), 568–582
- 2006 **Seongmin A. Park**, and SeungHo Ryu, *The influence of immersive experience of gamer on product placement (PPL) advertising perception*, **Journal of Korea Game Society**, 6 (3)

In review

- 2021 Linda Q Yu *, **Seongmin A Park** *, Sarah C Sweigart, Erie D Boorman †, Matthew R Nassar † (*, † equal contributions),
Do grid codes afford generalization and flexible decision-making?
 Preprint: <https://arxiv.org/pdf/2106.16219>

Peer-Reviewed Conference Proceedings

- 2022 **Seongmin A. Park***, Jacob L. Russin*, Maryam Zolfaghar*, Randall C O'Reilly, Erie D Boorman (*, contributed equally), *The Geometry of Map-Like Representations under Dynamic Cognitive Control*, Proceedings of the annual meeting of the cognitive science society (**CogSci**)
- 2022 Jacob L. Russin, Maryam Zolfaghar, **Seongmin A. Park**, Randall C O'Reilly, Erie D Boorman, A *Neural Network Model of Continual Learning with Cognitive Control*, Proceedings of the annual meeting of the cognitive science society (**CogSci**)
- 2022 **Seongmin A. Park***, Jacob L. Russin*, Maryam Zolfaghar*, Randall C O'Reilly, Erie D Boorman (*, contributed equally), *The geometry of map-like representations under dynamic cognitive control*, Computational and Systems Neuroscience (**Cosyne**)
- 2021 Jacob L. Russin, Maryam Zolfaghar, **Seongmin A. Park**, Erie D Boorman, Randall C O'Reilly, *Complementary Structure-Learning Neural Networks for Relational Reasoning*, Proceedings of the annual meeting of the cognitive science society (**CogSci**)
- 2020 Seongmin A. Park, Douglas S. Miller, Erie D Boorman, *Hexadirectional coding of decision trajectories through abstract and discrete spaces*, Computational and Systems Neuroscience (**Cosyne**)
- 2019 Koosha Khalvati, Saghar Mirbagheri, **Seongmin A. Park**, Jean-Claude Dreher, Rajesh PN Rao, *A Bayesian Theory of Conformity in Collective Decision Making*, Neural Information Processing Systems (**NeurIPS**)
- 2016 Koosha Khalvati, **Seongmin A. Park**, Jean-Claude Dreher, Rajesh Rao, *A Probabilistic Model of Social Decision Making based on Reward Maximization*, Neural Information Processing Systems (**NeurIPS**)

Invited Talks

- Sept. 2022 *How does the brain construct and navigate a cognitive map of abstract relationships to guide novel decision-making?*, Cognitive Graph Meeting, University of California, Irvine, California
- Sept. 2022 *The geometry of cognitive maps under dynamic cognitive control*, Nee Lab, Florida State University, Tallahassee, Florida
- June. 2022 *Understanding human cognition using neuroimaging*, Methodology of Social Science Seminar Series, Seoul National University, Seoul, South Korea
- May. 2022 *The geometry of cognitive maps under dynamic cognitive control*, 25th Korean Society for Brain and Neural Sciences (KSBNS), Incheon, South Korea
- May. 2022 *The geometry of cognitive maps under dynamic cognitive control*, Neuroimaging center, Sungkyunkwan University, Suwon, South Korea
- Nov. 2021 *How does the brain construct and navigate a cognitive map of abstract relationships to guide novel decision-making?*, Neuroscience and Social Decision Making talk Series, Princeton University, NJ, USA

- Mar. 2021 *How does the brain construct and navigate a cognitive map of abstract relationships to guide novel decision-making?*, Neuroimaging center, Sungkyunkwan University, Suwon, South Korea
- Nov. 2020 *Neural computations of strategic decision-making in the volunteer's dilemma*, Social Computational Neuroscience Symposium, Peking University, Beijing, China
- Oct. 2020 *How does the brain construct and navigate a cognitive map of abstract relationships to guide novel decision-making?*, Feldmanhall Lab, Brown University, RI, USA
- Sep. 2020 *How does the brain construct and navigate a cognitive map of abstract relationships to guide novel decision-making?*, fMRI brown bag, Dartmouth College, NH, USA
- Feb. 2018 *How does the brain infer unobserved relationships between elements in different knowledge structures?*, Memory seminar, UC Davis, CA, USA
- Oct. 2017 *Neural computations of strategic decision-making in the volunteer's dilemma*, perception cognition and cognitive neuroscience (PCCN) seminar, UC Davis, CA, USA
- Feb. 2016 *Cooperative decision-making in volunteer's dilemma*, Hanse-Wissenschaftskolleg, Institute for Advanced Study, Delmenhorst, Germany
- Jan. 2016 *Neural mechanisms of collective decision-makings in a group*, Centre de neurosciences cognitives (UMR 5229), CNRS, Bron, France
- Nov. 2014 *Subjective confidence in one's decision and group size effect during group decisions*, Virginia Tech Carilion Research Institute, Roanoke, VA, USA
- Sep. 2013 *How we make a decision as a group member*, Neuroscience department in Università degli Studi di Parma, Parma, Italy
- Oct. 2012 *Neural Underpinnings of Factors influencing Aesthetic Judgment of Artworks*, Centre de neurosciences cognitives (UMR 5229), CNRS, Bron, France

Conference Presentations

- Nov. 2022 Seongmin A. Park, Maryam Zolfaghar, Jacob L. Russin, Douglas S. Miller, Randall C. O'Reilly, Erie D. Boorman, *The geometry of cognitive maps under dynamic cognitive control*, Society for Neuroscience (SfN 2022), San Diego, CA, USA
- Aug. 2022 Seongmin A. Park, Maryam Zolfaghar, Jacob L. Russin, Douglas S. Miller, Randall C. O'Reilly, Erie D. Boorman, *The geometry of cognitive maps under dynamic cognitive control*, Cognitive Computational Neuroscience (CCN 2022), San Francisco, CA, USA
- Apr. 2022 Seongmin A. Park, Maryam Zolfaghar, Jacob L. Russin, Douglas S. Miller, Randall C. O'Reilly, Erie D. Boorman, *The geometry of neural representations of cognitive maps under dynamic cognitive control for flexible decision-making*, Cognitive neuroscience society (CNS 2022), San Francisco, CA, USA
- Oct. 2020 Seongmin A. Park, Douglas S. Miller, and Erie D. Boorman, *Grid-like codes for novel inferences during value-based decision making*, Society for Neuroeconomics (SNE 2020), Virtual
- Oct. 2019 Seongmin A. Park, Douglas S. Miller, and Erie D. Boorman, *Hexadirectional coding in human entorhinal cortex represents the trajectory through social networks during decision-making*, Society for Neuroscience (SfN 2019), Chicago, IL, USA
- Sep. 2019 Seongmin A. Park, Douglas S. Miller, and Erie D. Boorman, *Hexadirectional coding of trajectories through an abstract multidimensional social network during decisions*, Cognitive Computational Neuroscience (CCN 2019), Berlin, Germany

- Sep. 2019 Seongmin A. Park, Douglas S. Miller, Hamed Nili and Erie D. Boorman, *A cognitive map of social network space*, Cognitive Computational Neuroscience (CCN 2019), Berlin, Germany
- Aug. 2019 Seongmin A. Park, Douglas S. Miller, and Erie D. Boorman, *Hexadirectional coding of trajectories through an abstract and discrete social network during decisions-making*, Bay Area Memory Meeting (BAMM 2019), San Jose, CA, USA
- May, 2019 Seongmin A. Park, Douglas S. Miller, Hamed Nili and Erie D. Boorman, *Integrating discrete abstract structures to construct cognitive maps of social hierarchies*, Social and affective neuroscience (SANS 2019), Miami, FL, USA
- Nov. 2018 Seongmin A. Park, Douglas S. Miller, Hamed Nili and Erie D. Boorman, *Integrating discrete abstract structures to construct cognitive maps of social hierarchies*, Society for Neuroscience (SfN 2018), San Diego, CA, USA
- Sep. 2017 Seongmin A. Park, and Jean-Claude Dreher, *Neural computations of strategic decision-making in the volunteer's dilemma*, Society for Neuroeconomics (SNE 2017), Toronto, Canada
- Jun. 2017 Seongmin A. Park, *Neural computations of strategic decision-making in the volunteer's dilemma*, Reinforcement Learning and Decision Making (RLDM 2017), Ann Arbor, MI, USA
- Jun. 2016 Seongmin A. Park, Sidney Goïame, David A. O'Connor and Jean-Claude Dreher, *The dlPFC mediates decision confidence to influence social conformity*, Decision Neuroscience in Humans, Delmenhorst, Germany
- Jun. 2016 Seongmin A. Park, Sidney Goïame, David A. O'Connor and Jean-Claude Dreher, *The brain optimally integrates group size and social influence during group decision-making*, Decision Neuroscience in Humans, Delmenhorst, Germany
- May. 2015 Seongmin A. Park, Sidney Goïame, and Jean-Claude Dreher, *Neural mechanisms underlying diffusion of responsibility*, Symposium on biology of decision-making (SBDM 2015), Paris, France
- May. 2015 Seongmin A. Park, Sidney Goïame, and Jean-Claude Dreher, *The brain optimally integrates group size and social influence during group decision-making*, Symposium on biology of decision-making (SBDM 2015), Paris, France
- Nov. 2014 Seongmin A. Park, Sidney Goïame, and Jean-Claude Dreher, *Subjective confidence in one's decision and group size effect during group decisions*, Society for Neuroscience (SfN 2014), Washington DC, USA
- Jun. 2014 Seongmin A. Park, and Jean-Claude Dreher, *Justice decisions: brain integration of confidence in own judgment and other's opinion*, The Annual Congress of the French Economic Association (63rd AFSE), Lyon, France
- Jun. 2014 Seongmin A. Park, and Jean-Claude Dreher, *Justice decisions: brain integration of confidence in own judgment and other's opinion*, Organization for Human Brain Mapping (OHBM 2014), Hamburg, Germany
- May 2014 Seongmin A. Park, Sidney Goïame, and Jean-Claude Dreher, *Third-party punishment for justice – how does the brain integrate one's confidence in judgment and other juror's opinion*, Symposium on biology of Decision Making (SBDM 2014), Paris, France
- Jun. 2012 Seongmin A. Park and Jaeseung Jeong, *Artistic style recognition influences on reward processing during aesthetic judgment of paintings*, Organization for Human Brain Mapping (OHBM 2012), Beijing, China

- Jun. 2012 Seongmin A. Park, Yongjin Jin, Chongwook Chung, and Jaeseung Jeong, *Neural correlates of alterations in aesthetic judgment of artworks with judgments of others*, Organization for Human Brain Mapping, (OHBM 2012), Beijing, China
- Apr. 2012 Seongmin A. Park; Youngjin Jin, Chongwook Chung, and Jaeseung Jeong, *Neural correlates of social influences on aesthetic judgment for artworks*, Social & Affective Neuroscience Society Annual Meeting (SANS 2012), New York, USA
- Nov. 2010 Seongmin A. Park, Yoonsol Lee, Chongwook Chung, and Jaeseung Jeong, *The effect of contextual framing on the aesthetic appraisal of visual artworks*, Society for Neuroscience (SfN 2010), San Diego, CA, USA
- Oct. 2009 Seongmin A. Park, Soyeong Jeong, and Jaeseung Jeong, *The influence of investigative TV report on viewers' cooperative and free-riding behaviors in public goods game*, Society for Neuroscience (SfN 2009). Chicago, IL, USA
- Apr. 2008 Seongmin A. Park, Kyongsik Yun, and Jaeseung Jeong, *Painting's information increases aesthetic preference for contemporary paintings* Cognitive Neuroscience Society (CNS), San Francisco, CA, USA

Scholarships

- 2005 - 2011 Selected as fully supported scholarship program by *Korea Ministry of Culture, Sports and Tourism*
- 2001 - 2005 Selected as fully supported scholarship program by *Korea Research Foundation*

Honors and Awards

- Apr. 2022 CNS 2022 Trainee Abstract Travel Award
- Sep. 2019 CCN 2019 Trainee Abstract Travel Award
- Apr. 2019 Gazzaniga award, Best poster, Center for mind and Brain, UC Davis
- Mar. 2019 CNS 2019 Trainee Abstract Travel Award
- Jun. 2012 OHBM 2012 Trainee Abstract Travel Award
- Aug. 2007 Minister's Award for Excellent Student (Unanimous Recommendation from faculty members in Graduate School of Culture Technology (GSCT))
- Feb. 2007 *Summa Cum Laude*, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea
- Aug. 2005 *Summa Cum Laude*, Ajou University, Suwon, Korea

Services

- Ad Hoc Reviewer* Nature Communications; Cell Reports; Science Advances; Communication Biology; Journal of Neuroscience; Cerebral Cortex; Social Cognitive and Affective Neuroscience Scientific Reports; Journal of Experimental Psychology: General; Frontiers in Psychiatry; Cognitive Processing; and STAR Protocols
- Workshop organization* *Do grid codes afford generalization and flexible decision-making?*, Conference on Cognitive Computational Neuroscience (CCN 2020), *Generative Adversarial Collaborations Series*, Oct. 2020