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Cognitive and Systems Neuroscience Laboratory  
Department of Brain and Cognitive Sciences  
College of Natural Sciences, Seoul National University  
Rm 644, Bldg 220, Gwanak-ro 1, Gwanak-gu, Seoul, KR

Education

2015–	<b>Ph.D. in Brain and Cognitive Science</b> (Expected, Feb 2024) Advisor: <i>Prof. Sang-Hun Lee</i>	Seoul National University College of Natural Sciences
2009–2014	<b>B.S. in Behavioral Neuroscience</b> Advisor: <i>Prof. Choongkil Lee</i> <b>B.A. in Economics</b>	Seoul National University College of Liberal Studies

Grants, Fellowships, Awards

2021–2022	<b>Seoul National University BCS-AI Interdisciplinary Research Grant</b> Seoul National University. (Title: “Exploring dynamic circuit mechanism underlying the interplay between working memory and decision making”)	
Jul–Nov, 2017	<b>Research and Education (R&amp;E) Program Grant</b> Korean Ministry of Science and ICT and Korea Foundation for the Advancement of Science & Creativity. (Title: “A neuroscience study on the dynamic evolution of uncertainty and confidence during decision-making”)	
2018–2020	<b>Lecture &amp; Research Scholarship</b>	
2016–2017, SP 2015	<b>Brain Korea 21 Plus Scholarship</b>	
FA 2015	<b>Merit-based Scholarship</b>	
Apr–Jun, 2014	<b>A*STAR Singapore International Pre-Graduate Award (SIPGA)</b>	
FA 2013	<b>Brain-Mind-Behavior Thesis of the Year</b> Seoul National University	
FA 2013	<b>Grand Prize, The 1st Student Academic Symposium.</b> College of Liberal Studies, Seoul National University	
SP 2011, FA 2009	<b>Superior Academic Performance Scholarship</b>	
2010	<b>Donggok Lee Yong Hee Foundation Fellowship</b>	

Publication

2023	<b>Corrective feedback guides human perceptual decision-making by informing about the world state rather than rewarding its choice.</b> <i>PLOS Biology</i> . DOI: <a href="https://doi.org/10.1371/journal.pbio.3002373">10.1371/journal.pbio.3002373</a> . <a href="#">Lee, H.-J.</a> ; <a href="#">Lee, H.</a> ; <a href="#">Lim, C.Y.</a> ; <a href="#">Rhim, I.</a> ; <a href="#">Lee, S.-H.</a>
2023	<b>Neural evidence for boundary updating as the source of the repulsive bias in classification.</b> <i>Journal of Neuroscience</i> . DOI: <a href="https://doi.org/10.1523/JNEUROSCI.0166-23.2023">10.1523/JNEUROSCI.0166-23.2023</a> . <a href="#">Lee, H.</a> ; <a href="#">Lee, H.-J.</a> ; <a href="#">Choe, K.W.</a> ; <a href="#">Lee, S.-H.</a>
2023	<b>Decision-consistent bias mediated by drift dynamics of human visual working memory.</b> <i>bioRxiv</i> . DOI: <a href="https://doi.org/10.1101/2023.06.28.546818">10.1101/2023.06.28.546818</a> . <a href="#">Gu, H.</a> ; <a href="#">Lee, J.</a> ; <a href="#">Kim, S.</a> ; <a href="#">Lim, J.S.</a> ; <a href="#">Lee, H.-J.</a> ; <a href="#">Lee, H.</a> ; <a href="#">Choe, M.</a> ; <a href="#">Yoo, D.-G.</a> ; <a href="#">Ryu, J.H.</a> ; <a href="#">Lim, S.</a> ; <a href="#">Lee, S.-H.</a>

- 2010 **The effects of residual capacity on nontarget processing.**  
*The Korean Journal of Cognitive and Biological Physiology*. DOI: [10.22172/cogbio.2010.22.4.009](https://doi.org/10.22172/cogbio.2010.22.4.009).  
Kim, J.Y.\*; Lee, H.-J.\*; Kim, J.-O. (\*Co-first authorship; published as an outcome of an undergraduate experimental psychology class)

## Conferences

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- 2016 **Optimal and suboptimal integration of sensory and value information in perceptual decision-making.**  
Poster at *Computational and Systems Neuroscience (COSYNE)*. Salt Lake City, USA.  
[Lee, H.-J.](#); Rhim, I.; Lee, S.-H.
- 2016 **Learning from feedback in perceptual decision-making: Are we updating “value” or “rule”?**  
Poster at *Computational Neuroscience Meeting (CNS)*. Jeju island, South Korea.  
[Lee, H.-J.](#); Lee, S.-H.
- 2019 **Learning decision criteria from feedback for visual classification.**  
Poster at *Asia-Pacific Conference on Vision (APCV)*. Osaka, Japan.  
[Lee, H.-J.](#); Lee, H.; Rhim, I.; Lee, S.-H.
- 2019 **The role of feedback in criterion inference.**  
Poster at *Brain Research Organization and Federation of Asian-Oceanian Neuroscience Societies (IBRO)*. Daegu, South Korea.  
[Lee, H.-J.](#); Lee, S.-H.
- 2021 **Disentangling neural signatures of sensory and decisional biases in visual working memory.**  
Poster at *Society for Neuroscience (SfN)*. Online.  
Gu, H.; Kim, S.; Yoo, D.-G.; [Lee, H.-J.](#); Lee, H.; Lee, J.; Lim, J.S.; Choe, M.; Lee, S.-H.
- 2022 **Multiple stages of visual working memory distinctly contribute to the bias-variability pattern in delayed orientation estimation.**  
Poster at *Society for Neuroscience (SfN)*. San Diego, USA.  
Yoo, D.-G.; Gu, H.; Lee, J.; Kim, S.; Choe, M.; Lee, H.; [Lee, H.-J.](#); Lim, J.S.; Lee, S.-H.
- 2023 **Drift dynamics interact with a confirmation bias in visual working memory.**  
Poster at *Brain Research Organization and Federation of Asian-Oceanian Neuroscience Societies (IBRO)*. Montreal, Canada.  
Gu, H.; Lee, J.; [Lee, H.-J.](#); Lee, H.; Lim, J.S.; Choe, M.; Kim, S.; Ryu, J.H.; Yoo, D.-G.; Lim, S.; Lee, S.-H.

## Skill Highlights

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- MATLAB/Python/C++/Linux
- Neuroimaging tools: FSL/ANTs/SPM/Ciftify/Workbench
- Computational modeling: Bayesian inference/RL/RNN
- Psychophysics/Eye-tracking/fMRI

## Research Experiences

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- FA 2014 **Research Internship at Cognitive and Systems Neuroscience Laboratory**, Seoul National University.  
Advisor: *Prof. Sang-Hun Lee*
- Research subjects: Reinforcement learning models, sensory-value integration, effects of prior history on choices, Functional MRI in humans
  - Techniques: Computational modeling, Psychophysics, SIEMENS 3T fMRI, MATLAB
- Apr–Jun 2014 **Research Internship at Magnetic Resonance Imaging Group (MRIG)**, Singapore Bioimaging Consortium (SBIC), Agency for Science Technology and Research (A\*STAR), Singapore.  
Advisor: *Prof. Chuang Kai-Hsiang*, Department of Physiology Yong Loo Lin School of Medicine, National University of Singapore
- Research subjects: Functional MRI in mouse models for Huntington's Disease; developing anesthesia protocol; demyelination and remyelination process in cuprizone mouse model
  - Collaborators: *Dr. Chang Wei-Tang*, *Hui Chien Tay*
  - Techniques: Varian 9.4 T MRI; MouseOx Sensors, STARR Life Sciences Corp.

- FA 2011–  
FA 2013     **Undergraduate research at Eye Movement & Vision Research Laboratory**, Seoul National University.  
Advisor: *Prof. Choongkil Lee*, Department of Psychology
- Research subjects: Non-human primate decision making under uncertainty; effects of fixation duration during saccadic eye movement; temporal anticipation in visual detection tasks
  - Techniques: Infrared limbus tracker (Skalar IRIS); data analyses using MATLAB
- SP 2011–  
FA 2013     **Member of Journal Club, Darwinian Niche**, Seoul National University.  
Advisor: *Prof. Dayk Jang*, Program in History and Philosophy of Science and College of Liberal Studies
- Research subjects: Evolution of morality; moral psychology; neuroscientific approach of cultural evolution; mirror neurons; neuroethics
- Dec 2011–  
Feb 2012     **Research Internship at Magnetoencephalography (MEG) Center**, Seoul National University Hospital.  
Advisor: *Prof. Chun Kee Chung*, Department of Neurosurgery
- Research subjects: Spatio-temporal processing of word production in patients with tumors in Broca's area
  - Collaborators: *Dr. Jeong-Sug Kyong*, MEG Center, *Dr. June Sic Kim*, Department of Neurosurgery
  - Techniques: Elekta Neuromag system with 306 channels; analysis of MEG data using MriLab, Maxfilter, BESA, and MATLAB

## Teaching Experiences

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- 2020     **TA, class "Neuroscience and Sociality"**  
Lecturer: *Prof. Daeyeol Lee* (Johns Hopkins University, USA)  
- arranged zoom sessions for class and led student discussions on a weekly basis
- 2017     **Mentoring, Research and Education (R&E) Program**  
- mentored 4 high school students from Hansung Science High School in conducting a psychophysics experiment and performing statistical analyses.

## Leadership and Outreach

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- 2018–  
Feb 2022     **Student Leader of Cognitive and Systems Neuroscience Laboratory**, Seoul National University.  
- organized lab official events, facilitated communications between different labs, demonstrated initiative in writing grant proposals, and helped improve the overall research environment
- Aug 2013     **Student Leader of International Youth Volunteer Program Team, GAON**, Seoul National University.  
Vientiane, Vang Vieng, & Luang Prabang, Lao People's Democratic Republic  
- led the overseas volunteer team and coordinated the logistics of the volunteer work, which included teaching local elementary school students
- 2010–2011     **The 11th President of Asian Law Students' Association, Korea Chapter**  
- led general assemblies and secured sponsorship from the Korea-Japan Cultural Foundation and one of Asia's largest law firms, Kim & Chang, for organizing academic events nationwide as well as internationally
- FA 2009,  
FA 2011     **Volunteer with Language Education Center Buddy Program for International Students**. Seoul National University
- SP 2010     **Member of 3rd Happy Culture Network, University Volunteer Club, PHRONESIS NANOOM**. Seoul National University