JaeHeon Lee

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Education

Dartmouth College Fall 2026 – Present
Ph.D. in Psychological and Brain Sciences Hanover, NH
Advisor: Prof. John D. Murray

Korea Advanced Institute of Science and Technology (KAIST) Spring 2019 – Spring 2026
B.S. in Biology Daejeon, South Korea
Minor in AI (AI Special Designated Major)
Minor in Electrical Engineering (KAIST-NYU Minor Program in Electrical Engineering)
GPA: 3.95 out of 4.30 / Major GPA: 4.02 out of 4.30

New York University (NYU) Fall 2024
Exchange Student (NYU in Electrical Engineering), GPA: 4.0 out of 4.0 New York, NY

Awards & Scholarship

Korea-U.S. High-Tech Industry Scholarship Fall 2024
KAIST Student Activity Diamond Level (Highest Distinction) Fall 2024
Academic Excellence Scholarship (Top 3-4 in Department of Biological Sciences) Spring 2024
Outstanding Tutor Award (Cell Biology and Biochemistry II) Fall 2021
Undergraduate Research Program Grant (Creative Project) Fall 2021
KAIST Cho Jeong-Hun Academic Scholarship (Representative of KongjuNU High School) Spring 2018

Research & Work Experience

Systems Neuro Lab, KAIST December 2020 – February 2021
Advisor: Prof. Min Whan Jung

- Conducted T-maze behavioral experiments with water-deprived rats and assisted with surgical procedures

Brain x Machine Intelligence Lab, KAIST June 2021 – December 2021
Advisor: Prof. Sang Wan Lee

- Investigated spatiotemporal propagation of error signals in meta-reinforcement learning
- Applied regression-based multi-voxel pattern analysis to decode neural patterns in fMRI data

Deep Bio Inc. March 2022 – February 2024
Korea's Industrial Technical Personnel Program (Alternative Military Service)

- Focused on prognostic efficacy of AI products in prostate adenocarcinoma
- Analyzed the morphology exhibited in various cancer types' histopathological images using deep learning
- Developed various algorithms for image quantification and enhancing user convenience

Computational Cognitive Neuroscience Lab, KAIST March 2024 – Present
Advisor: Prof. Yul HR Kang

- TreasureHunt2D: Developed web-based games, collected and analyzed data from human subjects performing click and ellipse-drawing tasks to test a constrained Bayesian model of how humans process uncertainty during multi-step decision making
- Hairpin: Analyzed neural mechanisms of spatial navigation in hairpin maze by extending Bayesian Image-computable Observer for Navigation (BION) to capture probabilistic belief representations in grid cell populations

Savin Lab, New York University September 2024 – Present
Advisor: Prof. Cristina Savin

- Investigating curriculum learning and neural dynamics reuse in sequential multi-task learning
- Analyzing task compositionality and multitask learning in a recurrent neural model

Publications & Presentations

Publications

Mechanisms of skill transfer from pretraining to target task in recurrent neural networks (2025)
manuscript in preparation
JaeHeon Lee, David Hocker, Cristina Savin

Learning cognitive maps from noisy observations (2025)
preregistered (OSF), manuscript in preparation
JaeHeon Lee, Jeongjae Park, Yul HR Kang

Multimodal beliefs captured by a population code during navigation (2025)
manuscript in preparation
JaeHeon Lee and collaborators (authors to be determined)

Presentations

Learning cognitive maps through combining noisy observations (Poster, 2025)
Korean Society for Cognitive and Biological Psychology (KSCBP)
JaeHeon Lee, Jeongjae Park, Yul HR Kang

Morphological feature discrepancies in wild-type vs. BRCA1/BRCA2 mutated high-grade serous ovarian cancer (Poster, 2024)
American Association for Cancer Research (AACR)
JaeHeon Lee, Hyunil Kim, Yongeun Lee, Yoon-La Choi, Kyungsoo Jung, TaeYeong Kwak, Sun Woo Kim, Hyeyoon Chang

Deep learning-based histomorphological pattern profiles for effective risk stratification in prostate cancer (Abstract, 2023)
American Society of Clinical Oncology (ASCO)
JaeHeon Lee, Tae-Yeong Kwak, Joonyoung Cho, Sun Woo Kim, Hyeyoon Chang

Validation of AI-based postoperative nomograms for biochemical recurrence in prostate adenocarcinoma (Abstract, 2023)
American Society of Clinical Oncology (ASCO)
JaeHeon Lee, Tae-Yeong Kwak, Joonyoung Cho, Sun Woo Kim, Hyeyoon Chang

Exploring the efficacy of a continuous form of the histologic grade in prostate cancer prognosis prediction (Abstract, 2023)
American Society of Clinical Oncology (ASCO)
Tae-Yeong Kwak, **JaeHeon Lee**, Joonyoung Cho, Sun Woo Kim, Hyeyoon Chang

Algorithm-based histologic grade and tumor ratio for radical prostatectomy: Comparison with pathology reports (Abstract, 2023)
American Society of Clinical Oncology (ASCO)
Tae-Yeong Kwak, **JaeHeon Lee**, Joonyoung Cho, Sun Woo Kim, Hyeyoon Chang

Spatiotemporal Propagation of Error Signals in Meta-Reinforcement Learning (Poster, 2021)
KAIST Undergraduate Research Program (URP)
JaeHeon Lee, Yoondo Sung, Sang Wan Lee

Patents

Method for estimating tumor volume, and computing system performing the same (2024)
Korean Patent Office
Patent No. 10-2023-0067641 (Granted: December 3, 2024)

Method for generating representative lesion images of pathological diagnosis case, and computing system performing the same (2024)
Korean Patent Office
Patent No. 10-2024-0014784 (Granted: July 3, 2024)

Method for determining severity of disease using pathological image, method for determining slide-level severity of disease, and computing system performing the same (2023)
Korean Patent Office
Patent No. 10-2022-0067465 (Granted: January 2, 2023)

Teaching & Mentorship

Undergraduate Research Mentor May 2024 – Present
Computational Cognitive Neuroscience Lab (Advisor: Prof. Yul HR Kang), KAIST

- Mentored four undergraduate students on computational neuroscience research projects and methods.

CRAYON (Community-based RelAY Online educatioN) – English Tutor 2022

- Provided remote relay-tutoring sessions to support English learning for children in rural communities

Tutor group, Department of Biological Sciences 2021
Courses: Cell Biology, Biochemistry II (Received Outstanding Tutor Award)

Proctor group, Freshman Mentoring Group 2021
Guided 30 first-year students on academic and campus life.

Languages

Korean (Native)
English (Fluent) - TOEFL iBT: 108/120
Chinese (Intermediate) - HSK Level 4

Activities & Leadership

Neuromatch Academy – NeuroAI 2024
Pretty Movie Club member 2020 – 2021
ICISTS (International Conference for the Integration of Science, Technology and Society) 2019 – 2020
Public Relations Team Head
Baobab A Cappella Club Member 2019 – 2020
Student Leader, Freshmen Class (Happy College Life) 2019