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Curriculum Vitae
Joonhee (Leo) Lee, M.S.
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CONTACT INFORMATION

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Postdoctoral Fellow
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EDUCATION AND TRAINING

2026 - Present	Postdoctoral Fellow	Human Evolutionary Biology Harvard University Athinoula A. Martinos Center for Biomedical Imaging Cambridge, MA, USA Advisors: Christopher W. Kuzawa, Ph.D. 　　　　　Jingyuan Chen, Ph.D.
2020 – Dec 2025	Ph.D.	Biomedical Engineering Department of Biomedical Engineering Chib Neuroeconomics Laboratory Johns Hopkins University School of Medicine Baltimore, MD, USA Advisor: Vikram Chib, Ph.D. GPA:4.0
2019 – 2020	M.S.	Neuroscience Krieger School of Arts and Sciences Johns Hopkins University, Baltimore, MD, USA Advisor: James J. Knierim, Ph.D. GPA: 4.0
2015 – 2019	B.S.	Major: Neuroscience Minor: Mathematics Krieger School of Arts and Sciences Johns Hopkins University, Baltimore, MD, USA GPA: 3.92

SECTION I. SCHOLARLY ACTIVITY

MAIN RESEARCH AREAS

Behavioral and neurobiological mechanisms underlying human:
1. Cognitive mapping and memory.
2. Sensorimotor control and learning.
3. Decision-making.

PUBLICATIONS

Zhou Y., Puliyadi V., Chen X., **Lee J.**, Zhang L., Knierim J.J. Vector coding and place coding in hippocampus share a common directional signal. *Nature Communications*

Lee J., Casamento-Moran A.**,** A. J. Bastian, K.E. Cullen, Chib V.S. Striatal and cerebellar interactions during reward-based motor performance. *PNAS* https://doi.org/10.1073/pnas.2503373122

In Preprint

Casamento-Moran A., Kim A., **Lee J.**, Chib V.S. Neuromuscular signals shape fatigue and effort-based decision-making in humans.

In Preparation

1. **Lee J.**, Wang Y., Casamento-Moran A., McNamee D., Chib V.S. Cognitive maps for sensorimotor control.
2. **Lee J.**, Casamento-Moran A.**,** Kim A., Chib V.S. The influence of agency on risk and loss preferences.
3. Casamento-Moran A., **Lee J.**, Kim A., Quigley K, Azola A., Malone L, Chib V.S. Neuromuscular mechanisms of physical fatigue in Long COVID.
4. Wang Y., Casamento-Moran A., **Lee J**., Chib V.S. Effort-Difficulty Based Decision Making

Invited Talks/Oral Presentations

1. *Cognitive maps for sensorimotor control*
   - Athinoula A. Martinos Center for Biomedical Imaging, **Massachusetts General Hospital/Harvard University**, Charlestown, MA. Fall 2025
   - Sensorimotor Learning Group (Wolpert-Lab), **Columbia University**, New York, NY. Summer 2025
   - Sensorimotor Learning Laboratory, **University of Pittsburgh**, Pittsburgh, PA. Summer 2025
   - CogT Lab, **Stanford University**, Stanford, CA. Summer 2025
   - Yale Translational Brain Imaging Program, **Yale University**, Newhaven, CT. Spring 2025

- **Neural Control of Movement Satellite Meeting**, Panama. Spring 2025
- Kahnt Lab, National Institute on Drug Abuse Intramural Research Program (**NIDA/NIH**), Johns Hopkins Bayview Campus, Baltimore, MD. Spring 2025

2. *Understanding the intersection between cognition and motor control*
Sensorimotor Learning Laboratory, **University of Pittsburgh**, Pittsburgh, PA. Summer 2025
3. *Striatal and cerebellar interactions during reward-based motor performance*
The Cognition and Action Lab, Department of Psychology, **University of California Berkeley**, CA. Spring 2025
4. *How our brains create maps for movement: Investigating sensorimotor mapping in the entorhinal cortex*
Johns Hopkins University Summer Flash Talk Series. *Baltimore, MD. Summer 2024*
5. *Translating the Optical Imaging Technique for Measuring Neuronal Activity from Mice to Rats*
Undergraduate Day of Research in Engineering, Arts, Medicine, and Sciences (DREAMS)*. Baltimore, MD. Fall 2019*

GUEST LECTURES

1. *Practical Human Neuroimaging: Preprocessing fMRI Data*
Department of Biomedical Engineering, Johns Hopkins School of Medicine. Baltimore, MD, USA. Spring 2023 & Spring 2024.
2. *Practical Human Neuroimaging: Constructing 1st Level Models*
Department of Biomedical Engineering, Johns Hopkins School of Medicine. Baltimore, MD, USA. Spring 2023 & Spring 2024.

POSTER PRESENTATIONS

1. **Lee J.**, Casamento-Moran A.**,** A. J. Bastian, K.E. Cullen, Chib V.S. *Striatal and cerebellar interactions during reward-based motor performance.* Gordon Cerebellar Conference. Summer 2025
2. **Lee J.**, Wang Y., Casamento-Moran A., McNamee D., Chib V.S. Cognitive maps for sensorimotor control. *Neural Control of Movement. Spring. 2025*
3. **Lee J.**, Wang Y., Casamento-Moran A., McNamee D., Chib V.S. Investigating the role of cognitive maps in representing sensorimotor programs. *Society for Neuroscience. Fall. 2024*
4. **Lee J.**, Wang Y., Casamento-Moran A., McNamee D., Chib V.S. Investigating a grid-like code for navigation in the sensorimotor domain. *International Symposium on Embodied Cognition. Spring 2024*
5. **Lee J.**, Wang Y., Casamento-Moran A., McNamee D., Chib V.S. Investigating a grid-like code for navigation in the sensorimotor domain. *Society for Neuroscience. Fall 2023*
6. Casamento-Moran A., Kim A., **Lee J.**, Chib V.S. Fatigue reflects an affective response to dyshomeostasis and is part of an allostatic strategy. *Society for Neuroscience. Fall 2022.*

7. Zhou Y., Puliyadi V., Chen X., **Lee J.**, Knierim J.J. Landmark vector cells in CA1 share a common directional signal with simultaneously recorded place cells. *Society for Neuroscience. Fall 2022.*
8. **Lee J.**, Casamento-Moran A., Chib V.S. Neural mechanisms underlying expectations and feedback of reward-based task performance. *Neural Control of Movement. Summer 2022.*
9. **Lee J.**, Chib V.S. Neural mechanisms underlying expectations of reward-based task performance. Society for Neuroscience. Fall 2020. *Society for Neuroscience. Fall 2020.*

SECTION II. TEACHING, SKILLS, & PROFESSIONAL EXPERIENCE

TEACHING

- **Neuroscience: Cellular & Systems II**   Spring 2024
  Teaching Assistant
  Instructors: Steward Hendry, Ph.D., Christopher Fetsch, Ph.D.,
  Kishore Kuchibhotla, Ph.D.
  Krieger School of Arts and Sciences
  Johns Hopkins University, Baltimore, MD

- **Practical Human Neuroimaging**   Spring 2023; Spring 2024
  Teaching Assistant
  Instructors: Vikram S. Chib, Ph.D., Hanzhang Lu, Ph.D.,
  Department of Biomedical Engineering
  Johns Hopkins University, Baltimore, MD

MENTORSHIP

Post-Doctoral Fellow

- Agostina Casamento-Moran   2023 – 2025
  - Neuroimaging

Graduate Students

- Yixuan Wang   2022 – Present
  - Neuroimaging, Experimental Design

- Kosisochukwu Ugorji   2024 – Present
  - Behavioral Analysis, Neuroimaging, Experimental Design

- Naser Al-Fawakhiri   2025 – Present
  - Experimental Design

- Jose Jarquin   2025 – Present
  - Behavioral Analysis

<u>Undergraduate Students</u>

- Ishan Kalburge, Undergraduate Research Assistant   2022 – 2023
    - Experimental Design & Data Collection
- Rhys Gough, Undergraduate Research Assistant   2022 – 2023
    - Experimental Design & Data Collection

SKILLS

- <u>Software</u>
    – Python – Data Analysis & Simulations
    – R – Data Analysis
    – Javascript – Designing Online Experiments
    – Matlab - Data Acquisition, Analysis & Simulations
        ▪ Statistical parametric mapping (SPM 12) for fMRI data
            • Univariate Analysis
            • Signal Extraction (VOI)
            • Bayesian fMRI analyses
            • Functional Connectivity (PPI)
            • Dynamic Causal Modeling (DCM)
            • Multi voxel pattern analysis (MVPA)
                ○ Representational Similarity Analysis (RSA)
                ○ Pattern component modeling
        ▪ Simulink (Simulations)
    – Ansys Fluent (Simulations of computational fluid dynamics)
    – Solidworks & Ansys Discovery (3D Design)
    – Adobe Illustrator
- <u>Relevant Coursework</u>
    – Neuroscience Cognition II (Grade Received A)
    – Methods in Biostatistics I (Grade Received A)
    – Methods in Biostatistics II (Grade Received A)
    – Methods in Biostatistics III (Grade Received A)
    – Methods in Biostatistics IV (Grade Received A)
    – Models of the Neuron (Grade Received A)
    – Learning Estimation and Control (Grade Received A+)
    – Machine Intelligence (Grade Received A)
    – Brain & Behavior in Mental Disorders (Grade Received A)

- <u>Hardware</u>
    – Surgical Implants for in-vivo recording in rodents.
    – Force Transducers
    – 3D design and printing

- Other Skills and Certifications

    – Certified MRI scan operator
    Kirby Research Center, Kennedy Krieger Institute, Baltimore, MD

PROFESSIONAL EXPERIENCE

Industry Experience

- **Research Engineer & Scientific Contributor**   Summer 2024-Spring 2025
  CortiTrack, Baltimore, MD
    - Designing microneedle array for tracking cortisol in humans.
    - Algorithm development for predicting changes in cortisol levels.
- **Nucleate Activator Program**   Fall 2024
  Pava Marie LaPere Center for Entrepreneurship, Baltimore, MD
    - Semi-finalist in pitch competition.

SECTION III. PROFESSIONAL, ACADEMIC, & SOCIAL SERVICE

Professional Societies

- Society for the Neural Control of Movement
- Society for Neuroscience

Honors

- Neuroscience Departmental Honors, Johns Hopkins University Undergraduate Neuroscience Department
- Dean's List, Johns Hopkins University

Scientific Editor

- *ReVision*, Johns Hopkins University, Baltimore, MD   2024-Present

Volunteer Work

- **Elevate K-12**   2019
    Online Live-Stream Tutoring

- **MERIT STEM Academy Tutor**   2018
    Arlington Middle School, Baltimore, MD

- **HopKids: Therapeutic aid for children with brain, spinal and musculoskeletal injuries**   2017
    Kennedy Krieger Institute, Baltimore, MD

- **MEDLIFE Fundraiser Volunteer**   2016
    Johns Hopkins University, Baltimore, MD

- **MEDLIFE Mobile Clinic Volunteer**   2016
    Lima, Peru