Jungpyo Lee, Ph.D.

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Professional Experience

Appointments

Aug. 2024 – present	**Postdoctoral Scholar**, University of California, Berkeley Department of Mechanical Engineering

Education

2019 – 2024	**Ph.D. Mechanical Engineering**, University of California, Berkeley, CA, USA
2015 – 2017	**M.Sc. Mechanical Engineering**, Yonsei University, Seoul, South Korea
2009 – 2015	**B.Sc. Mechanical Engineering**, Yonsei University, Seoul, South Korea

Research Experiences

Aug. 2019 – present	**Embodied Dexterity Group**, University of California, Berkeley, CA, USA *Ph.D. Candidate → Postdoc (Advisor: Prof. Hannah Stuart)* Research: Design for Autonomous robots, Tactile sensor, Human-robot collaboration
Apr. 2015 – May 2019	**Center for BioMicrosystems**, Korea Institute of Science and Technology, Seoul, South Korea *Research Trainee (2015) → Commissioned Researcher (2018) (Advisor: Dr. Il-Joo Cho)* Research: Brain-machine interface, Biosensor, Neuromodulation
Mar. 2015 – Aug 2017	**Nano Electro-Mechanical Device Lab**, Yonsei University, Seoul, South Korea *M.Sc (Advisor: Prof. Seong Chan Jun)* Research: Nanomaterials, Neural connectivity
Mar. 2014 – Feb 2016	**Astrodynamics and Control Lab**, Yonsei University, Seoul, South Korea *Engineer | Structure and Thermal control system (Advisor: Prof. Sang-Young Park)* Research: CANYVAL-X mission URL

Awards & Recognition

2025	• Featured article for February 2025 in TSNRE: link (Related work in I.A.[J8]) • Spotlighted article in UC Berkeley College of Engineering: link (Related work in I.A.[J8]) • Article in R&D World Magazine: link (Related work in I.A.[J8]) • Featured on Berkeley's new Impacts of Research page: link (Related work in I.A.[J8]) • "Best Presentation" at The 3rd Stanford x Berkeley Korean Researcher Academic Conference
2024	• Spotlighted article in Science Robotics' "Editor's Choice": link (Related work in I.A.[J7]) • Fung Institute Capstone Technical Leadership Award: link • "Best Presentation" at The 2nd Stanford x Berkeley Korean Researcher Academic Conference

2018
- Korean Government Scholarship for Graduate Study Overseas, 2019-2021

2017
- The Best Paper Award Oral Session, the 19th Korean MEMS Conference
- Best Paper Award, School of Mechanical Engineering, Yonsei University

Research Publication

ORCID: 0000-0002-2949-7773 Google Scholar: Profile

I. Refereed Publications

0. In preparation

Lee, **J.**, Chen, S.-J., Sudhir, K., Stessman, L., & Stuart, H. S. (n.d.). AI-Driven Personalized Assistive Wearable Grasper with Human Variability.

A. Archival Journals

J11 **Lee**, **J.**, McPherson, A. I. W., Akhavan, A., & Stuart, H. S. (n.d.). Evaluating supernumerary dorsal grasping in the home for people with C5-C7 spinal cord injury. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*. **Under Review**.

J10 **Lee**, **J.**, & Stuart, H. S. (n.d.). Co-designing suction cup structure and haptic control policy for adaptive robotic grasping. *The International Journal of Robotics Research*. **Under Review**.

J9 **Lee***, **J.**, McPherson*, A. I. W., Ma, D., & Stuart, H. S. (n.d.). Stow-able Passive Supernumerary Dorsal Grasping. *Assistive Technology*. **Accepted**.

J8 **Lee**, **J.**, McPherson, A. I. W., Huang, H., Yu, L., Gloumakov, Y., & Stuart, H. S. (2025). Expanding Functional Workspace for People With C5-C7 Spinal Cord Injury With Supernumerary Dorsal Grasping. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, *33*, 22–33. **Featured article for February 2025: link**, **Newletter in Berkeley Engineering: link**. doi:10.1109/TNSRE.2024.3514135

J7 **Lee***, **J.**, Lee*, S. D., Huh, T. M., & Stuart, H. S. (2024). Haptic search with the Smart Suction Cup on adversarial objects. *IEEE Transactions on Robotics*, 226–239. **Spotlighted article in Science Robotics' "Editor's Choice": link**. doi:10.1109/TRO.2023.3331063

J6 Jeong, U.-J., **Lee**, **J.**, Chou, N., Kim, K., Shin, H., Yu, H.-Y., & Cho, I.-j. (2021). A minimally invasive flexible electrode array for simultaneous recording of ECoG signals from Multiple brain regions. *Lab on a chip*, 2383–2397. doi:10.1039/D1LC00117E

J5 Oh, S.-J., Lee, J. M., Kim, H.-B., **Lee**, **J.**, Han, S., Bae, J. Y., Hong, G.-S., Koh, W., Kwon, J., Hwang, E.-S. et al. (2019). Ultrasonic neuromodulation via astrocytic TRPA1. *Current Biology*, *29*(20), 3386–3401. doi:https://doi.org/10.1016/j.cub.2019.08.021

J4 **Lee***, **J.**, Ko*, K., Shin, H. [Hyogeun], Oh, S.-J., Lee, C. J., Chou, N., Choi, N., Tack Oh, M., Chul Lee, B., Chan Jun, S. et al. (2019). A MEMS ultrasound stimulation system for modulation of neural circuits with high spatial resolution in vitro. *Microsystems & Nanoengineering*, *5*(1), 28. doi:https://doi.org/10.1038/s41378-019-0070-5

J3 Kundu, A., **Lee**, **J.**, Park, B., Ray, C., Sankar, K. V., Kim, W. S., Lee, S. H., Cho, I.-J., & Jun, S. C. (2018). Facile approach to synthesize highly fluorescent multicolor emissive carbon dots via surface functionalization for cellular imaging. *Journal of colloid and interface science*, *513*, 505–514. **Cover Page**. doi:https://doi.org/10.1016/j.jcis.2017.10.095

J2 Ray, C., Lee, S. C., Sankar, K. V., Jin, B., **Lee**, **J.**, Park, J. H., & Jun, S. C. (2017). Amorphous phosphorus-incorporated cobalt molybdenum sulfide on carbon cloth: An efficient and stable electrocatalyst for enhanced overall water splitting over entire ph values. *ACS applied materials & interfaces*, *9*(43), 37739–37749. doi:https://doi.org/10.1021/acsami.7b11192

J1 Some, S., Sohn, J. S., Kim, J., Lee, S.-H., Lee, S. C., **Lee**, **J.**, Shackery, I., Kim, S. K., Kim, S. H., Choi, N. et al. (2016). Graphene-iodine nanocomposites: Highly potent bacterial inhibitors that are bio-compatible with human cells. *Scientific reports*, *6*(1), 20015. doi:https://doi.org/10.1038/srep20015

B. Peer-reviewed Conference Proceedings

C7 Jeong, G., **Lee**, **J.**, & Stuart, H. S. (2026). Enhanced haptic search with a multi-chamber suction cup using reverse flow. In *2026 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. **Submitted**. IEEE.

C6 Aderibigbe, J., Li, M., **Lee**, **J.**, & Stuart, H. S. (2025). Milli-scale acoustac sensing using soft helmholtz resonators. In *2025 IEEE International Conference on Robotics and Automation (ICRA)* (pp. 16585–16590). IEEE. doi:10.1109/ICRA55743.2025.11128844

C5 Lee, S., **Lee**, **J.**, & Stuart, H. S. (2024, October). Haptic contour following with the smart suction cup. In *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* (pp. 5232–5237). IEEE. doi:10.1109/IROS58592.2024.10802260

C4 **Lee**, **J.**, Sun, Z., Dong, Z., Chen, F., & Stuart, H. S. (2024, August). Regrasping on printed circuit boards with the smart suction cup. In *2024 IEEE International Conference on Robotics and Automation (ICRA)* (pp. 6477–6483). IEEE. doi:10.1109/ICRA57147.2024.10610153

C3 **Lee**, **J.**, Yu, L., Derbier, L., & Stuart, H. S. (2021, October). Assistive supernumerary grasping with the back of the hand. In *2021 IEEE International Conference on Robotics and Automation (ICRA)* (pp. 6154–6160). IEEE. doi:10.1109/ICRA48506.2021.9560949

C2 Park, J. P., Park, S. Y., Song, Y. B., Kim, G. N., Lee, K., Oh, H. J., Yim, J. C., Lee, E. [Eunji], Hwang, S. H., Kim, S. [Sungwoo] et al. (2016, May). Cubesat developmentfor canyval-x mission. In *14th international conference on space operations, spaceops 2016* (AIAA–2016). AIAA. doi:10.2514/6.2016-2493

C1 Chae, U., Shin, H. [Hyoguen], Lee, H. J., **Lee**, **J.**, Choi, N., Lee, Y. J., Lee, S. H., Woo, J., Cho, Y., Yoon, E.-S. et al. (2016, February). A new mems neural probe system integrated with push-pull microfluidic channels and biosensors for real-time monitoring of neurochemicals. In *2016 IEEE 29th International Conference on Micro Electro Mechanical Systems (MEMS)* (pp. 329–332). IEEE. doi:10.1109/MEMSYS.2016.7421627

II. Non-Refereed Publications

A. Archived Preprints and Technical Reports

3 **Lee**, **J.**, Mcpherson, A. I. W., Huang, H., Yu, L., Gloumakov, Y., & Stuart, H. S. (2024, May). The supernumerary dorsal grasper for people with c5-c7 spinal cord injury. TechRxiv. doi:10.36227/techrxiv.171625805.56926586/v2. (Now refereed in I.A.[J8].)

2 **Lee**, **J.**, Lee, S. D., Huh, T. M., & Stuart, H. S. (2024, January). Initial analysis of data-driven haptic search for the smart suction cup. ArXiv. doi:https://doi.org/10.48550/arXiv.2401.06354

1 **Lee***, **J.**, Lee*, S. D., Huh, T. M., & Stuart, H. S. (2023, September). Haptic search with the smart suction cup on adversarial objects. ArXiv. doi:10.48550/arXiv.2309.07360. (Now refereed in I.A.[J7].)

B. Non-Refereed Archival Conference and Symposium Proceedings

2 Chase, U., Shin, H., **Lee**, **J.**, Choi, N., Lee, Y. J., Lee, S. H., Yoon, E.-S., Yu, H.-Y., & Cho, I.-J. (2016, December). A new mems neural probe system for real-time monitoring of neurotransmitters and neural signals. In *2016 Korean Mechanical Engineering Conference Fall Meeting* (pp. 3028–3028).

1 Chase, U., Shin, H., Lee, H. J., **Lee**, **J.**, Choi, N., Lee, Y. J., Lee, S. H., Yoon, E.-S., Yu, H.-Y., & Cho, I.-J. (2015, November). A new mems neural probe system integrated with push-pull microfluidic channels. In *70th Anniversary Korean Mechanical Engineering Conference* (pp. 2232–2232).

III. Books and Theses

2 **Lee**, **J.** (2024). *Enhancing grasping in robotic and human-robot systems by leveraging intrinsic functionality*. Ph.D. Dissertation. Retrieved from https://www.proquest.com/docview/3110962183?pq-origsite=gscholar&fromopenview=true&sourcetype=Dissertations%20&%20Theses

1 **Lee**, **J.** (2017). *Enhancement of functional connectivity in three-dimensional neuronal culture*. Master's thesis, Yonsei University. Retrieved from https://library.yonsei.ac.kr/search/detail/CATTOT000001862381

IV. Book Chapters

1 Park, J.-P., Park, S.-Y., Song, Y. B., Kim, G. N., Lee, K., Oh, H. J., Yim, J.-C., Lee, E. [EunJi], Hwang, S.-H., Kim, S. [SungWoo] et al. (2017). *Canyval-x mission development using cubesats*. doi:https://doi.org/10.1007/978-3-319-51941-8_30

V. Other

A. Patents and Patent Applications

1 Jun, S. C., Park, B., & **Lee**, **J.** (2017, October). Tonometer using fret. App. No. 1020150092327 Korean Patent.

Research Presentations

VI. Invited talks

2 From Brains to Robots: My Journey Through Research and Life. (2025, December), In *2025 End of the Year Seminar at Korean-American Scientists and Engineers Association (KSEA) Berkeley Chapter*, Berkeley, CA.

1 Grappling with the Environment: Design of Forceful Mobile Robots for Uncertain Planetary Surfaces. (2025, April), In *The HARDER Workshop*. Robosoft 2025, Lausanne, Switzerland.

VII. Seminars and Research Talks

8 From Additive Complexity to Intrinsic Intelligence: Designing Reliable Robotic Manipulation for the Real World. (2026, March), In *North Carolina State University*, Raleigh, NC.

7 Co-designing Multi-Chambered Suction Cups and Haptic Search Controller for Adaptive Robot Grasping. (2026, January), In *Gordon Reserach Seminar*, Ventura, CA.

6 Failure-Resilient Grasping Through Inherent Functionality: Autonomous and Assistive Perspectives. (2025, December), In *Research Seminar at Korean-American Roboticists Association (KARA)*, Online.

5 Grasping Together: Human-Robot Collaboration for Functional Recovery. (2025, November), In *The 3rd Berkeley x Stanford Academic Conference and Networking (organized by Korean Graduate Student Association, powered by Samsung)*, San Jose, CA.

4 Enhancing grasping in robotic and human-robot systems by leveraging intrinsic functionality. (2025a, April), In *Yonsei University*, Seoul, Korea.

3 Enhancing grasping in robotic and human-robot systems by leveraging intrinsic functionality. (2025b, April), In *Sogang University*, Seoul, Korea.

2 Enhancing grasping in robotic and human-robot systems by leveraging intrinsic functionality. (2025c, April), In *Sejong University*, Seoul, Korea.

1 Enhancing grasping in robotic systems by leveraging intrinsic functionality. (2024, November), In *The 2nd Berkeley x Stanford Academic Conference and Networking (organized by Korean Graduate Student Association, powered by Samsung)*, San Jose, CA.

VIII. Workshop and Conference Abstracts

8 **Lee**, **J.**, Lee, S., & Stuart, H. S. (2024, May). Investigating the Impact of Chamber Variations on Smart Suction Cup Deformation and Grasping Efficiency. In *RoboSoft 2024: Late Breaking Results*.

7 **Lee**, **J.**, Lee, S., & Stuart, H. S. (2023a, October). Model-based Tactile Regrasping with the Smart Suction Cup. In *IROS 2023 Workshop: RoboTac: Visuo-Tactile Perception, Learning, Control for Manipulation and HRI*.

6 **Lee**, **J.**, Lee, S., & Stuart, H. S. (2023b, October). Model-based Tactile Regrasping with the Smart Suction Cup. In *IROS 2023: Late Breaking Results*.

5 **Lee**, **J.**, McPherson, A., Huang, H., Gloumakov, Y., & Stuart, H. S. (2023a, October). The Dorsal Grasper 2.0: Supernumerary robotic grasping for people with C5/C6 Spinal Cord Injury. In *IROS 2023 Workshop: Assistive Robotics for Citizens*.

4 **Lee**, **J.**, McPherson, A., Huang, H., Gloumakov, Y., & Stuart, H. S. (2023b, October). The Dorsal Grasper 2.0: Supernumerary robotic grasping for people with C5/C6 Spinal Cord Injury. In *IROS 2023: Late Breaking Results*.

3 Chase, U., Shin, H., **Lee**, **J.**, Choi, N., Lee, Y. J., Lee, S. H., Yoon, E.-S., Yu, H.-Y., & Cho, I.-J. (2017, April). A new MEMS neural probe system for real-time monitoring of neurotransmitters and neural signals. In *KMEMS 2017*.

2 **Lee**, **J.**, Ko, K., Lee, J.-H., Oh, S.-J., Shin, H., Lee, B. C., Lee, C. J., Kim, T. s., Choi, N., Jun, S. C., & Cho, I.-J. (2017, April). MEMS Ultrasonic Transducer Array for Regulating Neural Circuits through Stimulation of Neurons. In *KMEMS 2017*.

1 **Lee**, **J.**, Ko, K., Lee, J.-H., Oh, S.-J., Shin, H., Lee, C. J., Kim, T. s., Choi, N., Jun, S. C., & Cho, I.-J. (2016, September). Micromachined Piezoelectric Transducer Array for Localized ultrasound Stimulation of Brain with High Spatial Resolution. In *19th Korean Society for Brain and Neural Science Annual Meeting*.

Teaching Experiences

University of California, Berkeley

Fall 2021

Mechatronics Design (ME 102B)
- Instructor: *Prof. Hannah Stuart*
- Graduate Student Instructor (Teaching Assistant)
- Laboratory section (Mechatronics, ESP32, Arduino, Mechanical design, Project management)

Fall 2020

Advanced Engineering Graphical Communication (E 128 / ME 292C)
- Instructor: *Prof. Dennis K. Lieu*
- Graduate Student Instructor (Teaching Assistant)
- Laboratory section (Creo, 3Ds Max, Project management)

Visualization for Design (E 25)
- Instructor: *Prof. Dennis K. Lieu*
- Graduate Student Instructor (Teaching Assistant)
- Laboratory section (2D engineering drawing, AutoCAD, GD&T)

Spring 2020

Visualization for Design (E 25)
- Instructor: *Prof. Dennis K. Lieu*
- Graduate Student Instructor (Teaching Assistant)
- Laboratory section (2D engineering drawing, AutoCAD, GD&T)

Mentorship

Current Graduate Student

Jadesola Aderibigbe (UC Berkeley), Gia Jeong (UC Berkeley), Isabel Morales (UC Berkeley), Sun Zheng (CUHK)

Current Undergraduate Student

Alahe Akhavan (UC Berkeley), Jeongbin Sohn (GIST)

Current Berkeley Master of Engineering (MEng)

Shou-Jen Chen, Lilyane Stessman, Krishnaa Sudhir (2025-2026)
- AI-Driven Design Optimization for Personalized Assistive Robots

Andrew Darmitzel, Michael Rubin, Li Li, Candice Xia (2025-2026)
- Open Hardware for Robotic Trash Sorting – Next Generation Smart Suction Cup

Past Berkeley Master of Engineering (MEng)

Jessica Boetticher, Adam Duong, Benjamin Margolis, Panos Pardalidis (2023-2024)
- Next generation assistive wearable for everyday grasping with Spinal Cord Injury
- Fung Institute Capstone Technical Leadership Award: link

Past Undergraduate Students

- Licheng Yu, Product & Process Development Engineer at Foxconn
- Haoxiang (Lucas) Hung, Recycling Program Manager at Triple L Global
- Derrick Ma, PhD student at CalTech

Service

Professional service

Reviewer activities

Trans. on Robotics, IEEE RA-L, IEEE/RAS IROS, Front. Aging Neurosci., Front. Robot. AI, Front. Med.

Professional Societies

- Institute of Electrical and Electronics Engineers (IEEE) since 2020
  → Active member of the IEEE Robotics and Automation Society (RAS)
- Korean-American Scientists and Engineers Association (KSEA) since 2024

Community Outreach

Educational

- 2026: Guided undergraduate students at Korea Nazarene University through a robotics lab tour and discussed research for wearable assistive devices, February 03.
- 2026: Mentored high school students of the Lee Do Leader Program (Sejong, Korea) in robotics, leading campus and lab tours during their U.S. visit and continuing to provide academic and career guidance beyond the visit, January.
- 2025: Robotics demonstration at Rosa Parks Elementary School (Berkeley, CA) during the Robotics & Engineering Demo Day, November 13.
- 2025: Guided undergraduate students at Seoul National University (SNU) through a robotics lab tour and shared career advice during a panel session as part of the SNU at Silicon Valley program, July 29.
- 2025: Led a hands-on session with young DaVinci scholars as part of the DaVinci Camp Summer Institute, letting students try the Dorsal Grasper system, June 18.
- 2025: Guest presentation at EnableTech, a student organization that designs and builds assistive technology for people with disabilities, March 03.

Publicity

- 2025: Interview, Hong Kong Centre for Logistics Robotics (HKCLR) news article “A robotics journey inspired by brain research”
- 2025: Featured article in Berkeley news, plus a social video posted on : TikTok | YouTube | Twitter | Facebook | Bluesky | Thread | LinkedIn |