

# Jongha Lee

## FULL-STACK BCI ENGINEER



**Full-stack brain-computer interface engineer** and innovator with 10+ years across neuroscience, semiconductor fabrication, and bioinspired medical devices. I pioneer human cognitive circuit modulation and translate breakthrough neural engineering into deployable clinical technologies.

As the **first engineer** at Axoft, I led development of an ultrasoft, immune-response-free BCI from **concept to clinically viable prototype**, achieving long-term in vivo stability, seamless surgical integration, and preclinical validation toward first-in-human studies. Experienced in startup team building, FDA Breakthrough Device designation strategy, and cross-functional leadership.

### PROFESSIONAL EXPERIENCE

#### Principal Scientist / Axoft, Cambridge, MA

JUN 2025 - OCT 2025 / Full-time

#### Senior Research Scientist / Axoft, Cambridge, MA

MAR 2022 - MAY 2025 / Full-time

- **First engineer of a neurotechnology startup**, leading the development of an ultrasoft, immune-response-free brain-computer interface from early concept to a clinically viable prototype. Led 5+ accelerated design-build-test cycles (3-6 months each), achieving stable, high-fidelity neural recordings for up to 18 months in vivo, a critical step toward human clinical trials.
- **Directed full-stack development** including advanced polymer synthesis, semiconductor microfabrication, precision electronics packaging, implantation techniques, neurosurgical execution, and large-scale neural data analysis. Oversaw and mentored a core multidisciplinary team while coordinating with executive team, manufacturing, preclinical, and vendor partners to align technical milestones with strategic goals.
- **First author of a company research preprint (medRxiv)** consolidating the company's three years of development, detailing design innovations, fabrication processes, and in vivo validation, and establishing the definitive technical foundation for clinical translation.
- **Contributed to regulatory submissions** supporting FDA Breakthrough Device Designation and transferred validated preclinical protocols to the clinical translation team for first-in-human readiness.
- **Designed and executed in vivo validation studies** that demonstrated reduced immune response, chronic biocompatibility, and stable long-term signal quality. Achieved **motor intention decoding** in preclinical models with implanted ultrasoft probes, illustrating the potential for next-generation, patient-controlled neuroprosthetic systems.

#### Postdoctoral Researcher / Harvard University, Cambridge, MA

FEB 2018 - FEB 2022 / Full-time

- Advanced next-generation neural interface technologies in the Donhee Ham Group (**CMOS-based high-density neural recording**) and the Lieber Group (**immune-response-free, syringe-injectable microelectrode arrays**), integrating device innovation with neuroscience-driven applications.

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### EDUCATION/TRAINING

2018-2022 | Postdoctoral Training in Neurotechnology

HARVARD UNIVERSITY

2012-2017 | Ph.D.

Bio & Chemical Engineering

SEOUL NATIONAL UNIVERSITY, KOREA

2010-2012 | M.S.

Materials Science & Engineering

SEOUL NATIONAL UNIVERSITY, KOREA

2006-2010 | B.S.

Materials Science & Engineering

SEOUL NATIONAL UNIVERSITY, KOREA

### SKILLS

**Neural Engineering:** BCI systems, neural signal decoding, Brain immune response

**Materials & Fabrication:** Polymer synthesis, semiconductor fabrication

**Electronics & Integration:** Device packaging

**In Vivo:** Rodent/porcine neurosurgery, implantation, chronic validation

**Data & Analysis:** Neural data acquisition, Python analysis

**Leadership:** 0-1 prototyping, technical strategy, project management and execution, stakeholder coordination

### ADDITIONAL INFO.

**Authorized to work in the U.S. without sponsorship.**

9 first-authored peer-reviewed research papers

3 U.S. patents (filed/granted)

12 Korean patents (filed/granted)