Stanford

Xingyu (Brian) Zhou

- Ph.D. Student in Bioengineering, admitted Autumn 2025
- Masters Student in Bioengineering, admitted Autumn 2026
- Curriculum Vitae available Online

Bio

BIO

Xingyu (Brian) Zhou is a Ph.D. student in Bioengineering at Stanford University, working in the lab of Professor E.J. Chichilnisky in the Departments of Neurosurgery and Ophthalmology. As a member of the Stanford Artificial Retina Project, he helps build an implant that records from and stimulates single retinal neurons. He develops and maintains the implant control software, including simultaneous neural recording and stimulation, and develops implant assembly and test protocols in collaboration with SLAC National Accelerator Laboratory and TU Delft. Co-advised by Professor Tsachy Weissman, he also developed custom template-based spike detection for the implant's compressed data readout, which recovers 101 of the 110 neurons found in a one-hour session from only a minute of recording.

Before joining the Chichilnisky Lab, he rotated in the lab of Professor Zhenan Bao, where he designed and verified a neuromorphic mechanoreceptor CMOS circuit for a stretchable organic electronic skin and co-developed a machine-learning framework for predicting circuit parameters.

He received his B.S. in Biomedical Engineering and Electrical Engineering from Johns Hopkins University in 2025. There he worked on neuromorphic correlator array chips with Professor Ralph Etienne-Cummings, studied whole-brain AMPA receptor distribution using light-sheet fluorescence microscopy in the labs of Professors Richard Huganir and Patrick Kanold, and led the Johns Hopkins Undergraduate Brain-Computer Interface Society's hybrid EMG/SSVEP brain-computer interface for telepresence robot control. He has also worked as an electrical engineering intern at Medtronic on the next-generation O-arm intraoperative imaging system.

HONORS AND AWARDS

- Member, Tau Beta Pi engineering honor society (top 12.5% of the JHU class of 2025), Tau Beta Pi (Fall 2023 - Present)
- Member, Omicron Delta Kappa leadership honor society (top 5% of JHU undergraduates), Omicron Delta Kappa (Summer 2024 - Present)
- Provost's Undergraduate Research Award, Summer Cycle ($6,000), Johns Hopkins University (June 2023)
- Student Initiatives Fund, Spring 2024 ($1,700), Johns Hopkins Whiting School of Engineering (February 2024)
- Catalyst Award ($1,000), Hopkins Office for Undergraduate Research (HOUR) (November 2023)

EDUCATION AND CERTIFICATIONS

- Bachelor of Science, Johns Hopkins University , Biomedical Engineering and Electrical Engineering (2025)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

I work on the Stanford Artificial Retina Project in the lab of Professor E.J. Chichilnisky, building an implant that records from and stimulates single retinal neurons, with the goal of restoring high-fidelity vision to people blinded by retinal degeneration.

My work spans the implant stack. I develop and maintain the implant control software, including a mode that records and stimulates simultaneously, and I develop implant assembly and test protocols in collaboration with SLAC National Accelerator Laboratory and TU Delft. Co-advised by Professor Tsachy Weissman, I developed custom template-based spike detection for the implant's compressed data readout: the method recovers 101 of the 110 neurons found in a one-hour session from only a minute of recording, which makes on-implant spike sorting practical at scale.

More broadly, I am interested in how circuit design, including low-power and neuromorphic approaches, and information-theoretic methods for compressed neural readout can make neural interfaces more scalable, and in translating high-resolution recording and stimulation into clinically viable devices.

LAB AFFILIATIONS

- E.J. Chichilnisky, Chichilnisky Lab (Stanford Artificial Retina Project) (1/1/2026)

Professional

WORK EXPERIENCE

- Electrical Engineering Intern - Medtronic Inc. (June 3, 2024 - August 16, 2024)

Publications

PRESENTATIONS

- An Intuitive and High Accuracy EEG-EMG Hybrid Brain Machine Interface for Telepresence Robot Control - Society for Neuroscience 2024 Conference (Neuroscience 2024) (October 5, 2024)