

# David Bakalov

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Bioengineering Master's ('25) student interested in neurotechnology research and entrepreneurship.

## Education

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/4.0 **MSE in Bioengineering**, University of Pennsylvania (Penn) | Philadelphia, PA 2023-25

3.82/4.0 **BS in Bioengineering**, University of California, Los Angeles (UCLA) | Los Angeles, CA 2018-22

**Achievements:** Finalists in BioE Senior Design Project || **MCAT score: 521** || Engineering Entrepreneurship Fellow

**Courses:** Signal Processing | Robotics | Tissue Engineering | Microcontrollers | Biocompatibility | Drug Delivery | Biostatistics | Machine Learning | MATLAB | Differential Eqns. | Multivariable Calc. | Linear Alg. | Engineering Entrepreneurship

## Work and Research

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**Penn Engineering Entrepreneurship Fellows Program**, Fellow | Philadelphia, PA Dec 2023 - Present

- One of **12 Penn students** selected for a 12-month work-study program to develop entrepreneurship skills in creating, scaling, and leading principled high-growth technology ventures.

**Pesaran Lab**, Volunteer Researcher | Philadelphia, PA Sep 2023 - Present

- Performing **independent research project** to analyze sleep-dependent motor learning in non-human primates.
- Will soon be trained in animal handling and neurosurgery.

**Halpern Lab**, Volunteer Researcher | Philadelphia, PA Sep 2023 - Present

- Assisting with data collection for **clinical trial of a deep-brain stimulation device (RNS)** intended for treatment of compulsive eating disorders. Trials involve EEG, RNS, VR tasks, food provocation tasks, and MATLAB behavioral tasks.

**Penn BE Labs Bio-Makerspace**, Student Employee | Philadelphia, PA Sep 2023 - Present

- Perform lab maintenance and student supervision during regular and extended hours.
- Train students in various techniques such as **laser cutting** and **3D printing**; assist with projects for lab courses and senior design.

**Suthana Lab**, Staff Research Assistant | Los Angeles, CA June 2022 - Aug 2023

- Managed clinical trial assessing effects of **transcranial magnetic stimulation (TMS)** on memory in impaired older adults. Conducted neuropsychological assessments, fMRI scans, TMS sessions, & EEG recordings.
- Increased recruitment rates by screening 200+ potential participants, enrolling ~2 participants per month for 3-week protocol.
- Assisted with studies in the **epilepsy monitoring unit** and with patients implanted with Responsive Neurostimulation (**RNS**) devices.
- Scheduled all lab meetings, project meetings, and lab visits.

**Senior Capstone Design**, Student & Team Manager | Los Angeles, CA Sep 2021 - June 2022

- Designed a **brain-computer interface (BCI)** using a real-time machine learning classifier to interpret motor imagery EEG signals.
- Created experimental paradigm in BCI2000 to collect EEG training data from participants, used TensorFlow to train and test classifier.
- Developed a **Tetris game** controlled by EEG in real-time by our classifier using BCPy2000.

**UCLA Brain Research Institute (BRI)**, Student Employee | Los Angeles, CA May 2021 - Mar 2022

- Contributed to BRI website re-design and maintenance; assisted in organizing faculty seminars and symposiums.
- Coordinated significant outreach events, including the Los Angeles Brain Bee and Brain Awareness Week.

## Skills

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**Programming** Python, MATLAB, LaTeX, Arduino

**Techniques** EEG, MRI, Transcranial Magnetic Stimulation (TMS), Laser Cutting, 3D printing, Soldering

**Software** Linux, Robotics Operating System, OpenCV, Solidworks, OnShape, Fusion360, DraftSight, NeuroPace, Prusa

**Certifications** TMS, MRI, EEG, HIPAA, Human Subjects Research, Shop Safety, General Chemical Safety, Lab Safety Fundamentals

## Leadership Experience

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**Neuroscience Undergraduate Society, UCLA** Sep 2018 - June 2022

President 2020-2021; Vice President 2019-2020

- Managed the largest neuroscience organization on campus, overseeing 100+ active quarterly members.
- Organized events including guest speakers, graduate school panels, lab placement fairs, and mentorship programs.
- Coordinated a department-recognized journal club and large-scale test prep sessions.

**CruX Neurotechnology Club, UCLA** Sep 2019 - June 2022

Team Lead & Events Coordinator

- Contributed to the club's competitive neurotech team, designing a hands-free typing 'P300 Speller' BCI.
- Led a student team in design of BCI for memory improvement through binaural audio stimulation.
- Organized guest speaker events, hackathons, and socials; contributed to 5x membership increase over 3 years.

**LCC Theatre Company, UCLA** Jan 2019 - June 2022

Writer/Director & Social Outreach Coordinator

- Wrote and/or directed several one-act plays for student-run theater company.
- Responsible for member outreach, show planning, and creating video content for social media account.

**Film & Photography Society, UCLA** Sep 2019 - June 2021

Writer & Assistant Director

- Wrote a script that was selected and produced as a short film for student-run video club.
- Took on various roles in several student films, including assistant director, gaffer, and lighting.