Julien A. Bloch

Contact Information

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Education

University of Washington, Seattle, Washington USA

Ph.D. Student in Bioengineering, expected graduation date May 2023
Advisor: Prof. Azadeh Yazdan-Shahmorad

University of California Berkeley, Berkeley, California USA

B.A., Physics, December, 2017
B.A., Cognitive Science (concentration in Computational Modeling), December, 2017

Professional Experience

Machine Learning Intern, Elementum

Palo Alto, California USA — June 2018 - August 2018

Developed machine learning models for supply chain data analytics. Deployed models to production through Apache Spark compute clusters and AWS Sagemaker.

Business Analyst Intern, Everwise

San Francisco, California USA — August 2013 - December 2013

Conducted market research, sales outreach, app prototyping, and business development planning. Reported directly to the CEO.

Research Experience

Graduate Research Assistant, Yazdan Lab - UW Depts. of Bioengineering and ECE

Seattle, Washington USA — September 2018 - Present

Primary research projects:

- Optogenetic modulation of sensorimotor areas in non-human primate to alter sensorimotor performance and rehabilitation.
- Nonlinear modeling analysis of optogenetic and electrical stimulation and recording in non-human primate sensorimotor cortex.
- Analysis of large-scale dynamics and plasticity using biophysically realistic computational model of neurons.
- Development of a Monte-Carlo photon transport model of photothrombotic lesion extent in neural tissue.

Undergraduate Research Assistant, Engineers for Exploration - UC San Diego Dept. of ECE

San Diego, California USA — June 2017 - August 2017

Developed computer vision models to automatically classify land area from images obtained via drone and satellite. Improved my skills in machine learning, computer vision, and remote sensing.

Undergraduate Research Assistant, SwarmLab - UC Berkeley Dept. of EECS

Berkeley, California USA — June 2015 - May 2017

Performed neural engineering research of acousto-optic waveuides for optical tissue penetration under the supervision of Professor Maysam Chamanzar (Carnegie Mellon), Professor Maharbiz (UC Berkeley), and Professor Alam (UC Berkeley). Improved my skills in circuit design, optics, and machining. The research culminated in a publication in *Nature Communications*.

Undergraduate Research Assistant, TAFLab - UC Berkeley Dept. of MechE

Berkeley, California USA August 2014 - December 2014

Performed quantum hydrodynamics research for Professor Reza Alam at the Theoretical and Applied Fluid Mechanics Lab. I conducted literature review and helped build parts of the experimental setup in a machine shop.

Honors and Awards

Co-Chair of Neural Stimulation Session at IEEE EMBC 2019 Berlin, 2019

Big Data in Genomics and Neuroscience Training Grant, 2019 - 2021

Graduate Education for Minorities Fellowship, 2018 - 2019

UW College of Engineering Dean's Fellowship, 2018 - 2022

Donald W. and Joan P. Baker Endowed Fellowship, 2018

UC Berkeley Dean's Honors, 2014

Journal Publications

J. Bloch, et al., "Data-Driven Nonlinear Model of Network Reorganization in Response to Optogenetic Stimulation of Non-Human Primate Cortex," *In preparation.*

K. Khateeb, **J. Bloch**, et al., "A Lesion-Based Tolbox for Studying Cortical Physiology in Non-Human Primates," *In preparation.*

D. Griggs, **J. Bloch**, S. Chavan, et al., "Autonomous Cage-Side System for Remote Training of Non-Human Primates," *In press.*

M. Chamanzar, M. Scopelliti, **J. Bloch**, et al., "Ultrasonic Sculpting of Virtual Optical Waveguides in Tissue," *Nature Communications*, Jan. 2019.

Conference Publications

J. Bloch, K. Khateeb, D. Silversmith, et al., "Cortical Stimulation Induces Network-Wide Coherence Change Across Non-Human Primate Cortex," *IEEE EMBC 2019*, Berlin, Germany, Jul. 2019.

Abstract Publications

J. Bloch, E. Shea-Brown, A. Yazdan-Shahmorad, "A Computational Model of Neural Connectivity Dynamics in Response to Stimulation of Non-Human Primate Sensorimotor Cortex," *SfN 2019 Conference*, Chicago, Il, Oct. 2019.

Oral Presentations

J. Bloch, K. Khateeb, D. Silversmith, et al., "Cortical Stimulation Induces Network-Wide Coherence Change Across Non-Human Primate Cortex," *IEEE EMBC 2019*, Berlin, Germany, Jul. 2019.

Poster Presentations

J. Bloch, E. Shea-Brown, A. Yazdan-Shahmorad, "A Computational Model of Neural Connectivity Dynamics in Response to Stimulation of Non-Human Primate Sensorimotor Cortex," *SfN 2019 Conference*, Chicago, Il, Oct. 2019.

Affiliations

Computational Neuroscience Center, Seattle, Washington USA, 2019 - Present

Center for Neurotechnology, Seattle, Washington USA, 2018 - Present

University of Washington Institute for Neuroengineering, Seattle, Washington USA, 2018 - Present

Washington National Primate Research Center, Seattle, Washington USA, 2018 - Present

Professional Memberships

Institute of Electrical and Electronics Engineers, 2019 - Present

Society for Neuroscience, 2018 - Present

Mentoring	Mentor to Yazdan Lab Researcher - Patrick Zhang, 2019 - Present
	Mentor to Yazdan Lab Undergraduate - Maxwell Weil, 2019 - Present
	Mentor to Yazdan Lab Undergraduate - Megana Boddam, 2019
Extracurricular Activities	Vice President of Center for Neurotechnology SLC, 2020 - Present
	Industry Liaison of Center for Neurotechnology SLC, 2019 - 2020
	Member of UW Biomedical Diversity Committee, 2019 - Present
	Officer of Neurotech@Berkeley, 2016 - 2017
	Volunteer with Berkeley Youth Engagement Advocacy and Housing Program, 2016 - 2017
	Member of Alpha Tau Omega Leadership Fraternity, 2014 - 2017
	Co-Founder and Officer of Berkeley Barbell Club, 2015 - 2016