# Vatanak Lavan

vl2400a@american.edu
4235 Alton Place Northwest • Washington, D.C. 20016 • (908) 395-9735

## Education

**American University** — Washington, D.C.
*PhD in Behavior, Cognition, and Neuroscience* — *Expected May 2029*

**Kean University** — Union, NJ
*Bachelor of Science in Computer Science, Minor in Mathematics* — *Dec 2023*

- Honors: Magna Cum Laude
- Relevant Courses: Big Data Computing, High Performance Computing, Machine Learning Algorithms, Software Engineering

## Research Experience

**Lawrence Berkeley National Laboratory** — Berkeley, CA
*Undergraduate Student Research Assistant with Dr. Ryan Ly* — *June 2023 – Aug 2023*

- Developed components of an automated, end-to-end, machine-learning-based spike sorting pipeline
- Analyzed extracellular electrophysiology data from NWB files using SpikeInterface
- Leveraged resources on the Perlmutter supercomputer to parallelize model training
- Implemented a CNN with PyTorch for supervised spike sorting, achieving a 93 percent accuracy

## Professional Development

**Neuromatch Academy** — Online
*Computational Neuroscience Course* — *July 2024*

- Completed an intensive program in computational neuroscience, covering topics such as neural data analysis, dynamical systems, and machine learning in neuroscience
- Engaged in hands-on projects applying computational methods to neuroscience problems
- Collaborated with an international cohort of students and researchers

**Google** — Online
*Google Software Product Sprint* — *June 2021 – Aug 2021*

- Participated in a 10-week program focused on web application development using Java, JavaScript, HTML, and CSS
- Collaborated with peers to build projects using Google Cloud Platform APIs
- Gained practical experience in industry best practices, including Git version control, code reviews, and distributed development

## Projects

**DeepSpikeSort** — Sep 2023 - Present

- Continued development of spike sorting pipeline initiated during research at Lawrence Berkeley National Laboratory
- Adapted the DeepCluster self-supervised framework for spike sorting

## Conference Presentations

Lavan, V., Kwak, D., & Huang, C.Y. (2023, April). *COVID-19 Pandemic Analysis: Does Income Affect Mortality Rate?*. Poster presented at the National Conference on Undergraduate Research (NCUR), University of Wisconsin-Eau Claire, Eau Claire, WI.

## Skills

- Languages: English, Khmer
- Programming Languages: Python, R, JavaScript, HTML/CSS
- Version Control: Git, GitHub
- Environment Management: Conda
- Scientific Computing: NumPy, pandas, Matplotlib, Numba, h5py, scikit-learn
- Deep Learning: PyTorch, HuggingFace
- Electrophysiology Data Analysis: SpikeInterface, PyNWB
- High-Performance Computing: SLURM
- Software: Google Workspace, Microsoft Office