Alice Berners-Lee, PhD

I am a data scientist with a background in neuroscience seeking to join the fight to stop climate change.
With over a decade of experience writing custom code to analyze large and complex data sets, I aim to apply my skills as a data scientist at a climate organization.

Somerville, MA | abernerslee@gmail.com | linkedin.com/in/alice-berners-lee/ | Website | GitHub

Technical Skills

PROGRAMMING LANGUAGES: Python | SQL | MATLAB | Arduino

DATA SCIENCE & MACHINE LEARNING: Linear & Logistic Regression, Classification, Clustering, Decision Trees, NLP, Feature Engineering (Numpy | Scipy | Scikit learn) | Data Processing & Visualization (Pandas | Matplotlib) | Time-series Analyses | Non-parametric Statistics | Distributed Computing (Spark, PySpark) | Neural Networks and Deep Learning (Tensor Flow, Keras) | Mapping (Geopandas, NetworkX, Shapely) | Communication (Git, Jupyter notebooks) | 3D Printing (Solidworks, Fusion 360)

CORE EXPERTISE: Data Collection & Analysis | Standard Operating Procedures | Process Implementation | Training | Proactive | Independent Contributor

Education

Data Scientist Certification - Fellowship Program | The Data Incubator | November 2022

Ph.D. in Neuroscience | Johns Hopkins School of Medicine | 2020 | Thesis Abstract

B.S. in Neural Science | New York University | 2013

Experience

HARVARD UNIVERSITY | The Murthy Laboratory **April 2021 – Present**
Postdoctoral Fellow

- Analyzed electrophysiological data from 1000+ neurons to understand how the odor cortex encodes scent mixtures.
- Delivered research paper to bioRxiv and submitted for publication with a recognized scientific journal.
- Discovered the odor cortex is a dynamic and robust system that can optimize for current and future demands at once.

JOHNS HOPKINS SCHOOL OF MEDICINE & UC BERKELEY | The Foster Laboratory **2015 – 2021**
Interim Postdoctoral Scholar | PhD Candidate

- Used MATLAB, Python, and Arduino to design and run experiments, analyzing terabytes of data with each experiment.
- Examined high-frequency events in the hippocampus to understand how memory is distributed across the brain.
    - Discovered new relationships between the discrete spikes in PFC with the oscillations in the hippocampus.
- Performed meta-analysis of data from multiple projects to explore how spatiotemporal features of replay transform.
    - Discovered that replays slow down with experience and take more time to represent the same memory, which has implications for reinforcement learning and computational models of memory
- Research Papers were published in *Neuron* and *Journal of Neuroscience* — both leading peer-reviewed journals.

Selected Projects & Papers

Carefree **– Be carefree, leave your car at home** Website, GitHub

- Processed public car crash data from MassDOT and Open Street Map data to build a model that predicts the danger of biking on each street of Somerville, MA and built a website that provides safer routes for users.

Hippocampal replays appear after a single experience and add greater detail with more experience Article Link

- Performed signal processing of local field potential to identify events with high oscillatory activity.
- Used Bayesian decoding on spike data from hundreds of simultaneous neuron recordings.

Learning-Dependent Evolution Of Odor Mixture Representations In Piriform Cortex Article Link

- Utilized time-series analysis, circular statistics, and data visualizations to test hypotheses, explore the novel dataset.
- Examined simultaneous data from 1000+ neurons and performed data analysis to understand physical processes.

Expert Presentations & Talks Example Presentation Link

- Presented at Computational and Systems Neuroscience (COSYNE), Society for Neuroscience (SfN), and others.