

MARK C ZIELINSKI, Ph.D.

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SKILLS

Languages	Python, MATLAB, R, Julia, HTML, CSS, Javascript, Bash/Zsh, SQL, Docker, Unix/Linux/HPCC
Tools & Packages	Jupyter, Pandas, NumPy, SciPy, Scikit-learn, Matplotlib, Seaborn, Bokeh, Librosa, Jupyter, Git/GitHub, AWS, LLM prompt engineering, BeautifulSoup, Selenium, TensorFlow, Pytorch, Jira, Bitbucket
Skills & Techniques	regression, classification, clustering, resampling, dimensionality reduction, modeling, machine learning, experimental design, parametric/nonparametric/circular/Bayesian statistics, causality inference, class imbalance, time series analysis, digital/analog signal processing, time delay embedding, dynamical systems, manifold learning, graph/information theory, RNASeq and scRNASeq, mentorship, project management

EXPERIENCE

Scipher Medicine 03/2021-Present
Data Scientist, Senior Data Scientist Boston, MA

- Used Bayesian inference, deep learning, and graph theoretic techniques to infer causality/directionality for drug re-purposing, using single cell and bulk RNASeq machine learning techniques, pipelines, and data sources.
- Ingested, organized, and streamlined clinical and genomic data/metadata from internal clinical trials and external EMR/EHR data sources (40% of all US RA patients), sharing these clean data pipelines to an AWS-native data lake, and piloting CI/CD and modern DevOps for reproducible code and data collaboration.
- Developed analyses, presentations, and materials for stakeholders to pursue data monetization and drug re-purposing partnerships using aforementioned EHR and genomic data sources and pipelines.
- Mentored two full-time summer interns and one MPH student practicum, designing and leading adoption of a formal mentorship framework in the DS department consisting of Python, git, SQL, AWS, statistics, and ML/AI.

Brandeis University 09/2013 - 03/2021
Graduate Researcher, Teaching Assistant, and Postdoctoral Scholar Boston, MA

- Collected and analyzed 1GB/min time series data to study neural interactions between the hippocampus and prefrontal cortex, two interconnected brain regions important for learning and decision making.
- Designed multiple, multi-year long studies and projects, including interpreting literature for gaps and fit, designing hardware, software, and novel analytical and mathematical techniques in MATLAB and Python.
- Used PCA, generalized linear models, unsupervised learning techniques, and Bayesian methods to decode brain cell responses and brain area communication, providing published new insights into representations of memory.
- Mentored graduate and undergraduate students in analytical techniques; wrote and directed a yearly internal course on computer science, continuous and discrete data analysis, and common statistical methods.

Freelance Data Science Consulting 10/2020 - 02/2021
Neuroscience/Data Science Consultant for Wave Neurosciences Boston, MA

- Analyzed double-blind clinical trial data of veterans with PTSD, consisting of 84 21-channel EEGs x 3 longitudinal time points.
- Used supervised and unsupervised machine learning techniques, information theory, and graph theory for comparisons and longitudinal trends in functional connectivity between sham and neuromodulation groups in wide and narrow-band power and coherence.
- Contracted for 80hrs, with deliverables including study and statistical design, python code, hosted data, notebooks, visualizations, presentations, and a study report outlining analyses.

Insight Data Science 08/2019 - 01/2020
Data Science Fellow Boston, MA

- Consulted with PyrAmes Inc. to identify, cluster, and clean movement artifacts from a wireless, non-invasive wearable device collecting continuous blood pressure diagnostics.
- Parsed over 100 hours of labeled and 1000 hours of unlabeled time series data, used spectral methods to engineer features and perform unsupervised clustering / blind signal source separation.

EDUCATION

Brandeis University 2013 - 2020
Ph.D. in Neuroscience, Certificate in Quantitative Biology

University of Chicago 2007 - 2011
B.A. in Biology, Specialization in Neuroscience, Minor in Computational Neuroscience