MARK C ZIELINSKI, Ph.D.

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SKILLS

Languages and tools	Python, MATLAB, R, HTML, CSS, Javascript, Bash/Zsh, SQL, Unix/Linux/HPCC, Git/GitHub/Bitbucket, Docker, AWS, GCP, LLMs, MLflow, DVC
Packages	Jupyter, Pandas, NumPy, SciPy, Scikit-learn, Matplotlib, Seaborn, Bokeh, BeautifulSoup, Selenium, PyTorch, TensorFlow, Tensorboard, DESeq2, Hugging Face, PySpark, Dask, XGBoost
Skills & Techniques	regression, classification, clustering, resampling, dimensionality reduction, modeling, machine learning, experimental design, causality inference, parametric/nonparametric/circular/Bayesian statistics, class imbalance, time series analysis, digital/analog signal processing, time delay embedding, dynamical systems, manifold learning, graph/information theory, explainable AI (xAI) RNASeq and scRNASeq, eQTL, differential expression, transformers, attention mechanisms, prompt engineering, few-shot learning, transfer learning, RAG, agentic AI, multi-agent systems, tool/function calling, MCP, vector databases, embeddings, semantic search, LLM evaluation & guardrails, structured outputs, MLOps, LLMOps, CI/CD for ML, A/B testing, feature engineering, model monitoring, data versioning, reinforcement learning, GANs, recommendation systems
Leadership and Business	mentorship, project management, JIRA, Confluence, internal/external stakeholder communication, AI powered automation, ETL/data pipeline development, product benchmarking/development, cross-functional team leadership, technical documentation, cost-benefit analysis, ROI assessment, AI strategy development, responsible AI practices

EXPERIENCE

Prompt Health 02/2025 - Present
Senior AI Engineer *Remote*

- Within my first two months, designed and shipped production Python software that generates an automated payer-intelligence report—surfacing the top claim rejections and denials by payer and delivering prioritized, actionable guidance to recover and prevent revenue loss.
- Lead a company-wide initiative to embed AI and agentic automation across the end-to-end revenue cycle management (RCM) pipeline, spanning API integrations with payers and clearinghouses, telephony workflows, and automated insurance benefits verification.
- Build ML/AI and automation over at-scale claims, remittance, and eligibility data spanning the entirety of Prompt RCM's rehab-therapy clinic network and tens of millions of dollars in accounts receivable, targeting denial prediction, automated claim correction, and accelerated reimbursement.

Scipher Medicine 03/2021 - 02/2025
Data Scientist, Senior Data Scientist *Boston, MA*

- Used Bayesian inference, deep learning, and graph theoretic techniques in R and Python 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 and GitHub version controlled data pipelines and ETLs to an AWS-native data lake, and piloting CI/CD and modern DevOps department wide 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.
- Developed a clinical endpoint simulation algorithm, improving ML outcomes with probabilistic labels, delivering conference abstracts and communicating with internal and external stakeholders on commercialization and medical/academic rheumatology impact.

- Implemented and productionized a SOTA DL model in PyTorch to predict drug response and non-response in RA, using fuzzy/probabilistic labels and bulk RNAseq + clinical data, MLOps, and model/data versioning.
- Mentored three 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.

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