

Erik J. Peterson, PhD

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IN SUMMARY

As a scientist I've worked and published in 10 fields, including scientific machine learning, causal analysis, chemistry, biochemistry, nanotechnology, surface science, computational neuroscience, cognitive science, reinforcement learning. As an engineer I write production-grade code and make clean architectures. And as a fallible human I once spilled \$200k in purified product on the floor of my lab. **Excellent scientist, thoughtful engineer, and I learn from my mistakes.**

EXPERIENCE

Phinyx - Providence, RI

Principle Scientist

2024 - Current

Head of research, automated programming for scientific computing. Led a total rewrite of the core library for NLP-driven program synthesis to make it work with any library or language. Did new research on chain-of-thought methods to scale Phinyx's technology to large complex simulations.

Pasteur Labs - New York, NY

Staff Scientist, Advanced Projects Lead (final position)

2022 - 2024

Led projects in causal AI and scientific machine learning. Focus was bridging academic research with industrial demands. Wrote a comprehensive scientific ML library (>30 networks). Did new research in "simulation intelligence" methods for analog computation with physical systems.

Carnegie Mellon University - Pittsburgh, PA

Research Fellow

2019 - 2022

Did new research on mathematical models of curiosity in reinforcement learning; established a new theoretical upper limit for biological computation.

Kernel - Los Angeles, CA

Senior Scientist

2017 - 2018

Led team developing model for complex spatio-temporal electrical field shaping, achieving 400,000-fold speed-up for real-time use in brain-computer interfaces.

U.C. San Diego - San Diego, CA

Postdoctoral Fellow

2014 - 2017

Did new research on optimal coding in neural oscillations. Co-developed a tool to analyze electrophysiological time-series that is now widely used in neuroscience (downloaded >275,000 times).

Colorado State University - Fort Collins, CO

Graduate Research Assistant

2006 - 2012

Did new research in human reinforcement learning, category learning. *Thesis*: Rewards are categories?

Biosearch Technologies - Novato, CA

Research Assistant II

2004 - 2006

Optimized high-throughput chemistry for DNA synthesis; developed reporter genes.

EDUCATION

Colorado State University (Fort Collins) - Ph.D, Psychology; Masters, Psychology.

California Polytechnic State University (San Luis Obispo, CA) - B.S., Chemistry; B.S., Biochemistry; Minor, Philosophy.

PROGRAMMING

Developed production-ready machine learning models in modern frameworks (jax, torch). Expert scientific programmer (python). Fluent in standard development tools (git, docker, etc).

SELECT

TOTAL CITATIONS: >2,000. H-INDEX: 14.

PUBLICATIONS.

Peterson EJ & Lavin A, Physical Computing for Materials Acceleration Platforms, *Matter* 5, 3586-3596 (2022).

Lavin A, et al, Simulation Intelligence: Towards a New Generation of Scientific Methods, *arXiv* 2112.03235 (2021).

Donoghue T*, Haller M*, **Peterson EJ***, et al, Parameterizing Neural Power Spectra into Periodic and Aperiodic Components, *Nature Neuroscience* 23 1655-1665 (2020).