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. Developed new 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**
Conducted new theoretical and computational research on the optimal coding of 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**

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 publications.

Total citations: >2,000. h-index: 14.

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).