

## Erik J. Peterson, PhD

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IN SUMMARY	Research leader. Excellent scientist. Thoughtful engineer.		
EXPERIENCE	<p><b>Phinyx</b> - Providence, RI <i>Principle Scientist</i> <span style="float: right;"><b>2024 - Current</b></span> Head of research, focusing on program synthesis and automated programming for scientific computing.</p> <p><b>Pasteur Labs</b> - New York, NY <i>Advanced Projects Lead</i> (final position) <span style="float: right;"><b>2022 - 2024</b></span> Led advanced projects in causal AI and scientific machine learning, bridging academic research and industrial applications. Spearheaded development of a comprehensive scientific ML library, including neural operators and graph neural networks (&gt;30 networks). Pioneered "simulation intelligence" methods for analog computations in physical systems.</p> <p><b>Carnegie Mellon University</b> - Pittsburgh, PA <i>Research Fellow</i> <span style="float: right;"><b>2019 - 2022</b></span> Developed mathematical models of curiosity in reinforcement learning and established new theoretical limits for biological computation.</p> <p><b>Kernel</b> - Los Angeles, CA <i>Senior Scientist</i> <span style="float: right;"><b>2017 - 2018</b></span> 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.</p> <p><b>U.C. San Diego</b> - San Diego, CA <i>Postdoctoral Fellow</i> <span style="float: right;"><b>2014 - 2017</b></span> Conducted theoretical and computational research on the optimal coding properties of neural oscillations. Co-developed of a python tool to analyze electrophysiological time-series which has found widespread use in the neuroscience community and been downloaded &gt;275,000 times.</p> <p><b>Colorado State University</b> - Fort Collins, CO <i>Graduate Research Assistant</i> <span style="float: right;"><b>2006 - 2012</b></span></p> <p><b>Biosearch Technologies</b> - Novato, CA <i>Research Assistant II</i> <span style="float: right;"><b>2004 - 2006</b></span> Optimized high-throughput chemistry for DNA synthesis; developed reporter genes.</p>		
EDUCATION	<p><b>Colorado State University</b> (Fort Collins) - Ph.D, Psychology; Masters, Psychology.</p> <p><b>California Polytechnic State University</b> (San Luis Obispo, CA) – B.S., Chemistry; B.S., Biochemistry; Minor, Philosophy.</p>		
PROGRAMMING	Developed production-ready machine learning models in modern frameworks (jax, torch). Expert scientific programmer (python). Fluent in standard development tools (git, docker, etc).		
PRESS/TALKS	<p>Brain's 'Background Noise' May Hold Clues to Persistent Mysteries, <i>Quanta Magazine</i>, 2021.</p> <p>Build Your Own Brainwaves, <i>Nerd Nite</i>, Los Angeles, Feb 2018.</p> <p>In Theory You're Paying Attention, <i>Ignite</i>, San Diego, Nov 2016.</p>		
SELECT PUBLICATIONS.	<p>TOTAL CITATIONS: &gt;2,000. H-INDEX: 14.</p> <p><b>Peterson EJ</b> &amp; Lavin A, Physical Computing for Materials Acceleration Platforms, <i>Matter</i> 5, 3586-3596 (2022).</p> <p>Lavin A, et al, Simulation Intelligence: Towards a New Generation of Scientific Methods, <i>arXiv</i> 2112.03235 (2021).</p> <p>Donoghue T*, Haller M*, <b>Peterson EJ*</b>, et al, Parameterizing Neural Power Spectra into Periodic and Aperiodic Components, <i>Nature Neuroscience</i> 23 1655-1665 (2020).</p>		