Erik J. Peterson, PhD

Contact Information

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About me

I am interested in curiosity as a mathematical idea, for use in machine learning and to predict human behavior. I am also interested in applied work as well. Curiosity and reinforcement learning in robots, drones, and design. Academically I study computation in the brain's other electrically active cells, astrocytes.

Recent Experience

Carnegie Mellon University - Pittsburgh, PA
Research Fellow (Research Scientist) **2018 - Present**
Machine learning. Curiosity learning. Reinforcement learning. Astrocyte computation. Deep neural networks. Game theory.

Kernel, LLC - Los Angeles, CA
Senior Research Scientist **2017 - 2018**
Technical lead building a *real-time* system for complex spatio-temporal field shaping in deep brain stimulation. Biophysical modelling. Deep neural networks.

U.C. San Diego - San Diego, CA
Postdoctoral Fellow **2014 - 2017**
Biophysical modelling of neural oscillations. Information and compression theory. Machine-learning tools to analyze electrophysiological time-series data. Software development.

Education

Colorado State University, Fort Collins, CO
Ph.D, Psychology **2012**
M.S., Psychology **2009**

California Polytechnic State University, San Luis Obispo, CA
B.S., Chemistry and Biochemistry; Minor, Philosophy **May 2004**

Programming

- pytorch

Projects

Public Talks & Press

Brain's 'Background Noise' May Hold Clues to Persistent Mysteries, Quanta Magazine, 2021.
Build Your Own Brainwaves, Nerd Nite, Los Angeles, Feb 2018.
Conflicted Data Science, Open San Diego, San Diego, Feb, 2016.
In Theory You're Paying Attention, Ignite, San Diego, Nov 2016.

Select publications

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

Peterson EJ & Verstynen T, The Curiosity Trick, *bioRxiv* 671362v9 (2021).