

BLAKE BORDELON

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EDUCATION

Harvard University

July 2019 - Present

Program: PhD in Applied Mathematics Advisor: Cengiz Pehlevan

Washington University in St. Louis

August 2015 - May 2019

Majors: Systems Engineering and Physics. Minor: Computer Science

GPA: 4.0/4.0

PREPRINTS

Learning Curves for SGD on Structured Features, Bordelon, Pehlevan, 2021

Out-of-Distribution Generalization in Kernel Regression, Canatar, Bordelon, Pehlevan, 2021

Rapid Feature Evolution Accelerates Learning in Neural Networks, Shan*, Bordelon*, 2021

Population Codes Enable Learning from Few Examples By Shaping Inductive Bias, Bordelon, Pehlevan, 2020

PAPERS

Spectral Bias and Task-Model Alignment Explain Generalization in Kernel Regression and Infinitely Wide Neural Networks, Canatar, Bordelon, Pehlevan, *Nature Comms.* 2021.

Spectrum Dependent Learning Curves in Kernel Regression and Wide Neural Networks, Bordelon, Canatar, and Pehlevan, *International Conference of Machine Learning*, 2020.

Dispersive optical model of Pb-208 generating a neutron-skin prediction beyond the mean field, Atkinson, Mahzoon, Keim, Bordelon, Pruitt, Charity, and Dickhoff, *Phys. Rev. C*, 2020

Pre-Synaptic Pool Modification (PSPM): A supervised learning procedure for recurrent spiking neural networks, Bagley, Bordelon, Moseley, Wessel, *PLOS ONE*, 2020

PRESENTATIONS

Neural Populations Learn from Few Examples through Code-Task Alignment, Cosyne 2021.

Statistical Mechanics of Generalization in Kernel Regression Deepmath Conference 2020.

Robustness Efficiency Trade-offs in Population Coding Neuromatch 2020.

AWARDS

McKelvey School of Engineering Valedictorian

May 2019

Nishi Luthra Senior Prize in Physics

May 2019

Systems Engineering Student of the Year Award

May 2017-2019

TEACHING EXPERIENCE

Teaching Fellow for Neural Computation (Certificate of Distinction)

Fall 2020

Teaching Assistant for Engineering Math

August 2017-May 2018

RELEVANT COURSEWORK

Neural Computation, Advanced Machine Learning, Physical Mathematics, Computing At Scale, High Dimensional Statistics, Mathematical Physics, Probability and Stochastic Processes, Control Systems

PROGRAMMING LANGUAGES

Strong Proficiency in Python (numpy, scipy, JAX, Pytorch, etc). Proficient in Matlab and C++.