

ALLIOT C. NAGLE

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EDUCATION

University of Texas at Austin
PhD Electrical Engineering

Aug. 2022 – Present

University of Wisconsin-Madison
MS Electrical Engineering

Sept. 2019 – Dec. 2021

University of Wisconsin-Madison
BS Electrical Engineering

Sept. 2014 – May 2019

RESEARCH EXPERIENCE

Graduate Researcher, University of Texas at Austin
Advisor: Hyeji Kim

Aug. 2022 – Present

- Conduct research at the intersection of information theory and machine learning
- Research interests include model/data compression and sparsity, and deep learning

Graduate Researcher, University of Wisconsin-Madison
Advisor: Barry Van Veen and Matthew Banks

May 2021 – Present

- Modeled brain function/stimulus response captured from EEG data as a multivariate auto-regressive model with a group LASSO penalty based on fMRI data
- Utilized high-throughput computing and meta-scheduler DAGman to pipeline large-scale cross validation and model selection jobs in MATLAB
- Wrote a set of MATLAB functions to quickly assemble a submission to HTCCondor systems, capable of launching up to hundreds of thousands of CPU jobs

Graduate Researcher, University of Wisconsin-Madison
Advisor: Dimitris Papailiopoulos

Sept. 2019 – Present

- Designed and implement deep learning experiments in Python using the PyTorch framework
- Researched sparsified and low-rank representations of neural networks

Algal Bloom Prediction & Modeling, University of Wisconsin-Madison
Advisor: Dimitris Papailiopoulos

Jan. 2018 – April 2020

- Cleaned and analyzed data from Clean Lakes Alliance, NOAA, and NTL-LTER to form data set
- Applied PCA, kernel SVMs, k-nearest neighbor, random forests, logistic regression, and neural networks to the data to choose best model and gather insight about the behavior of algal blooms
- Utilized high-throughput computing for model selection via cross validation
- Presented a poster at the Undergraduate Research Symposium summarizing my findings

PUBLICATIONS

- *Optimal Lottery Tickets via SubsetSum: Logarithmic Over-Parameterization is Sufficient.* Ankit Pensia, Shashank Rajput, **Alliot Nagle**, Harit Vishwakarma, Dimitris Papailiopoulos. NeurIPS 2020. Spotlight and poster. arxiv:2006.07990

AWARDS

- ECE Gerald Holdridge Outstanding Teaching Assistant Award Dec. 2019
- Cockrell School of Engineering Multi-Year Fellowship Aug. 2022 – Aug. 2026

TEACHING EXPERIENCE

- Graduate Teaching Assistant**, University of Wisconsin-Madison Sept. 2019 – May 2021
ECE 331 (Intro to Random Signal Analysis and Statistics) and ECE 204 (Data Science and Engineering)
- Recipient of the *ECE Gerald Holdridge Outstanding Teaching Assistant Award* for ECE 331
 - Answer students' questions during in-class activities and office hours. Engage with students in a flipped-classroom active learning environment to better facilitate their understanding of course content
 - Responsible for reviewing and editing all in-class activities, homeworks, and quizzes, and then implementing them in Canvas, our online learning tool
- Undergraduate Teaching Assistant**, University of Wisconsin-Madison Sept. 2018 – May 2018
ECE 203 (Signals, Information, and Computation) and ECE 330 (Signals and Systems)
- Answered students' questions in a flipped-classroom active learning environment in these introductory-level signal processing courses
 - ECE 203 topics included Fourier Series, FT, DTFT, DFT, sampling, LTI systems, FIR filters, discrete and continuous-time systems, difference and differential equations
 - ECE 330 topics included complex numbers, convolution, LTI systems, Fourier Series, DFT, sampling, filtering, image processing

WORK EXPERIENCE

- Data Science Intern**, Elutions May 2019 – Aug. 2019
- Performed data cleaning and feature engineering for predictive maintenance and Remaining Useful Life models. Implemented predictive maintenance model as a binary classification task
 - Developed scalable algorithms for automatically detecting air handling unit savings opportunities. Achieved savings of up to 72%
 - Analyzed time series data for various proof of concept tasks
- Hardware Engineering Intern**, Thermo Fisher Scientific May 2018 – Aug. 2018
- Designed the LED LightBar for the Nicolet Summit FTIR Spectrometer using Altium Designer
 - Developed, fabricated, and tested functioning prototypes of the LED LightBar
 - Collaborated with multi-disciplinary team of interns to develop the LED LightBar from conception to mass production
 - Wrote a technical procedure for generating RoHS compliancy reports for PCBAs

TECHNICAL SKILLS

Programming Languages	Python (Sci-kit Learn, PyTorch), C/C++ (CUDA, OpenMP, MPI), MATLAB, Java, Julia
Software & Tools	Amazon EC2, Slurm, HTCondor, L ^A T _E X, Altium Designer, Git

SELECTED COURSEWORK

- CS/ECE/ISyE 524: Introduction to Optimization
- CS/ECE/ME 532: Matrix Methods in Machine Learning
- CS 540: Introduction to Artificial Intelligence
- ECE 729: Theory of Information Processing and Transmission
- CS/ECE/ME 759: High Performance Computing for Engineering Applications
- CS 760: Machine Learning
- CS/ECE 761: Mathematical Foundations of Machine Learning
- CS/ECE 861: Theoretical Foundations of Machine Learning

VOLUNTEERING

- Poverty Alleviation Volunteer** (Cincinnati, OH), Alternative Breaks (W.U.D.) March 2018
- Engaged with the Greater Cincinnati Homeless Coalition to participate in educational activities about the problem of gentrification and homelessness in Cincinnati, OH
 - Provided food service to people experiencing homelessness
- Tutor and City Cleanup Volunteer** (Memphis, TN), Alternative Breaks (W.U.D.) March 2017
- Maintained and cleaned public and private property through trash pickup and urban gardening
 - Tutored children in an after-school program
- Urban Gardening Volunteer** (Madison, WI), Badger Volunteers Summer 2016
- Completed outdoor and gardening work for an energy-sustainable community center and middle school

PERSONAL PROJECTS AND INTERESTS

- E-bike** May 2019 – August 2019
- Converted my bike into an electric-powered bicycle using a hub motor E-bike kit
 - Designed and hand-built the 48V 13S5P battery pack using 65 lithium-ion NCA (nickel cobalt aluminum oxide) 18650 battery cells
- Hobbies**
- Reading, running, biking, weight training, cooking, and listening to or practicing music (I studied music in college before switching to electrical engineering)