ALLIOT C. NAGLE

acnagle@wisc.edu

EDUCATION

University of Wisconsin-Madison Sept. 2019 – Dec. 2021
MS Electrical Engineering

University of Wisconsin-Madison Sept. 2014 – May 2019
BS Electrical Engineering

RESEARCH EXPERIENCE

Graduate Researcher, University of Wisconsin-Madison May 2021 – Present
Advisor: Barry Van Veen and Matthew Banks

- Model brain function/stimulus response captured from EEG data as a multivariate auto-regressive model with an exogenous input (MVARX model) and a group LASSO penalty based on fMRI data
- Utilize high-throughput computing and meta-scheduler DAGman to pipeline large-scale cross validation and model selection experiments

Graduate Researcher, University of Wisconsin-Madison Sept. 2019 – Present
Advisor: Dimitris Papailiopoulos

- Design and implement deep learning experiments in Python using the PyTorch framework
- Research focus is centered around sparsified and low-rank representations of neural networks

Algal Bloom Prediction & Modeling, University of Wisconsin-Madison Jan. 2018 – April 2020
Advisor: Dimitris Papailiopoulos

- 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

Plasma Processing Technology Lab, University of Wisconsin-Madison May 2017 – Aug. 2017
Advisor: J. Leon Shohet

- Modeled surface potential of silicon wafers with thin films in MATLAB
- Increased reliability of and significantly reduced Kelvin probe operation times
- Wrote a technical report explaining the physics and principles of the Kelvin probe

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

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, LaTeX, 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
- 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 Cincinatti 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 elctrical engineering)