Alliot C. Nagle

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RESEARCH INTERESTS

Machine learning, optimization, algorithms, signal processing, information theory, control theory, and distributed systems

EDUCATION

University of Wisconsin-Madison
B.S. Electrical Engineering — Expected May 2019
Madison, WI

RESEARCH EXPERIENCE

Undergraduate Independent Researcher — January 2018 – Present
Professor: Dimitris Papailiopoulos — Madison, WI

- Collaborate with Professor Papailiopoulos on machine learning and data analysis techniques
- Analyze data on Madison's lakes to create a predictive model for algal blooms
- Apply PCA, kernels, k-nearest neighbor, least squares, and perceptron algorithm to the data
- Utilize high-throughput computing to perform computationally expensive analysis techniques
- GitHub Repository: https://github.com/acnagle/CLA-Project

Undergraduate Researcher, Plasma Processing Technology Lab — May 2017 – August 2017
Professor: J. Leon Shohet — Madison, WI

- Collaborated with Professor Shohet and graduate students on experiment procedures
- Focused extensively on the operation of the lab's Kelvin probe operation
  - Used MATLAB to model surface potential of silicon wafers with thin films as a 2D map
  - Increased accuracy and significantly reduced Kelvin probe operation times
  - Wrote a technical paper explaining the physics and principles of the Kelvin probe

TEACHING EXPERIENCE

Signal Processing Course Assistantship — September 2018 – Present
Course: Signals and Systems (ECE 330) — Madison, WI

- Topics included Fourier Series, FT, DTFT, DFT, sampling, LTI systems, FIR filters, discrete and continuous-time systems, difference and differential equations

Signal Processing Course Assistantship — January 2018 – May 2018
Course: Signals, Information, and Computation (ECE 203) — Madison, WI

- Topics included complex numbers, convolution, LTI systems, Fourier Series, DFT, sampling, filtering, image processing

RELEVANT COURSEWORK

Linear Algebra (MATH 340); Introduction to Artificial Intelligence (CS 540); Matrix Methods in Machine Learning (CS/ECE 532); Introduction to Optimization (CS/ECE 524); Introduction to Random Signal Analysis and Statistics (ECE 331); Signals, Information, and Computation (ECE 203); Signals and Systems (ECE 330); Introduction to Data Structures (CS 367)

PROFESSIONAL AND WORK EXPERIENCE

Hardware Engineering Intern May 2018 – August 2018
Thermo Fisher Scientific Madison, WI

- Designed LED bar for a next iteration molecular spectrometer on a mutli-disciplinary team
- Developed, fabricated, and tested functioning prototypes of the LED bar
- Wrote a technical procedure for generating RoHS compliancy reports for PCBAs
- Designed circuit and completed PCB layout in Altium Designer

Circulation Student June 2016 – August 2017
Steenbock Library, University of Wisconsin-Madison Madison, WI

- Worked at the front desk to assist patrons by answering questions, checking out library material, and processing incoming and outgoing request for library material

SERVICE

Poverty Alleviation Volunteer March 2018
Alternative Breaks, Wisconsin Union Directorate Cincinnati, OH

- Learned about gentrification and homelessness, and provided service to those in need

Tutor and City Cleanup Volunteer March 2017
Alternative Breaks, Wisconsin Union Directorate Memphis, TN

- Helped implement sustainability in Memphis and tutored children in an after-school program

Urban Gardening June 2016 – August 2016
Badger Volunteers Madison, WI

- Volunteered with a team to complete outdoor work for an energy-sustainable community center

SKILLS

Java, MATLAB, Python, Julia, Altium Designer, LaTeX

MEMBERSHIPS

IEEE Student Membership, IEEE Signal Processing Society Membership

PERSONAL

E-Bike

- Built an electric bicycle powered by a homemade battery

Chess AI

- Developing an AI to play chess in Java (in progress)