Liliaokeawawa Cothren

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Research Interests

Optimization theory, control and nonlinear systems theory, machine learning.

Education

University of Colorado, Boulder — Boulder, Colorado
Ph.D. in Electrical Engineering — May 2021 – Present
Advisor: Professor Emiliano Dall'Anese. *GPA: 3.95.*

Arizona State University — Tempe, Arizona
B.S. in Mathematics, with Honors — August 2017 – May 2021
GPA: 3.96.

Honors and Scholarships

Dean's Future Leadership Fellowship (CU Boulder)	2021
ECEE Excellence Fellowship (CU Boulder)	2021
Graduate School Diversity Fellowship (CU Boulder)	2021
Dean's List (ASU)	2017 – 2021
Outstanding Junior for Wexler Students (ASU)	2020

Publications

Online Optimization of Dynamical Systems with Deep Learning Perception
Liliaokeawawa Cothren, Gianluca Bianchin, Emiliano Dall'Anese.
IEEE Open Journal of Control Systems - Special Section on Machine Learning with Control, 2022.

Data-Enabled Gradient Flow as Feedback Controller: Regulation of Linear Dynamical Systems to Minimizers of Unknown Cost Functions
Liliaokeawawa Cothren, Gianluca Bianchin, Emiliano Dall'Anese.
Technical manuscript and poster session for the 4^{th} Annual Learning for Dynamics and Control Conference.

Research Experience

Graduate Research Assistant for the Dall'Anese Group
Advisor: Professor Emiliano Dall'Anese (CU Boulder) — May 2021 – Present
Build core background in optimization and control theory to specifically tackle problems within data-driven control and concurrent learning via theoretical and algorithmic developments. Verify theoretical findings with numerical simulations in MATLAB or Python. For recent work, please see here.

Undergraduate Honors Thesis on the Convergence to Optimal Rate due to Simple Heuristic
Advisor: Professor Theodore Pavlic (ASU) — August 2019 – May 2021

Submitted to The Barrett, Honors College Thesis Library and Digital Repository. Numerically simulate stochastic system via time synchronous clock and discrete-event-triggered codes. Formalize rigorous analysis proof that a simple decision-making heuristic guarantees optimal convergence onto a maximal caloric state of forager.

Teaching Experience

Teaching assistant, Department of Electrical Engineering (CU Boulder)
ECEN 3300: Linear Systems Spring 2022
Topics include analysis of LTI systems in time and frequency domains and applications of linear systems, including communications, signal processing, and controls. Responsible for scripting and delivering regular review sessions, exam review sessions, and grading homework and exams.

Teaching assistant, Department of Industrial Engineering (ASU)
IEE 380: Probability and Statistics for Engineers Spring 2019 - Spring 2020
Topics include discrete and continous random variables and probability (mass or) density functions, hypothesis testing of means, variances, and proportions, and applications for engineering problems. Responsible for scripting and delivering regular homework review sessions, exam review sessions, and proctoring exams.

Teaching assistant, Department of Industrial Engineering (ASU)
FSE 100: Introduction to Engineering Fall 2018
Topics include preliminary material to prepare students for an engineering mentality through a hands-on project focused on programming a robot to navigate a maze. Responsible for organizing materials and answering project questions.

Industry Experience

ASU Fulton Schools of Engineering Tutoring Centers Tempe, Arizona
Lead tutor for mathematics and industrial engineering Fall 2019 - Spring 2021
Instruct and assist in answering questions related to industrial engineering, probability, statistics, calculus, linear algebra, ordinary differential equations, and real analysis. Write training curricula for tutors, including technical review sessions of frequent coursework and training on how to effectively tutor a variety of learning styles.

United Parcel Service (UPS) Phoenix, Arizona
Industrial Engineering Intern Summer 2019
Collaborate on a multi-disciplinary team to plan for Peak season, including discussions with managers, plant engineers, and industrial engineers to draft accurate building layout and plot plans for 90 facilities. Presented recommendations in weekly updates, with success in redrafting some facilities' layouts for improved safety and efficiency.

Skills

Programming
Proficient in: MATLAB.
Familiar with: Python, Java.

Outreach

Fulton Ambassadors January 2018 – May 2020
Member

Engineering Summer Camp (E2) August 2018, August 2019
Counselor

Engineering Projects in Community Service August – December 2018
Member

Professional Memberships

Dean's Future Leaders Fellowship August 2021 – Present
Fellow

Association for Women in Mathematics August 2019 – May 2021
Member

Society for Women Engineers August 2019 – May 2020
Member

Other interests

Running, hiking, biking, gardening, knitting, crocheting.