

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 4th 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 continuous 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

Centennial High School STEM Panel

2018 – current

Yearly Panel Guest

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.