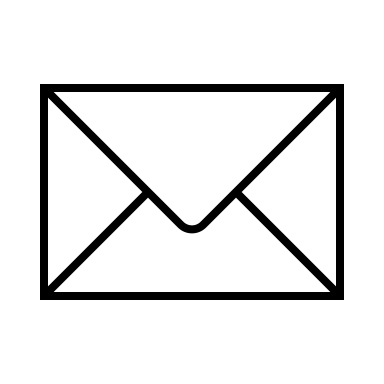
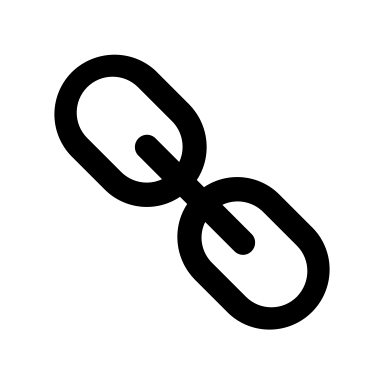
Khaled Alzamel

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# SUMMARY

An electrical and computer engineering student experienced in designing and controlling autonomous systems using fractional order differential equations for machine learning, with a research interest in decision-making under uncertainty.

# Education

**University of Southern California**

**B.S in Electrical and Computer Engineering**

**Expected Graduation Date**: December 2023

**Graduation Honor**: Cum Laude

**Courses**: EE-141 (Linear Algebra), EE-202 (Linear Circuits), EE-250 (IoT), EE-354 (Digital Design),

EE-355 (Software Design), EE- 364 (Probability), MATH-245 (Differential Equations)

**In-Progress**: EE-301 (Linear Systems), EE-370 (Electromagnetism), EE-459 (Embedded Systems Design),

EE-482 (Linear Control Systems), EE-554 (Cyber-Physical Systems)

# Research Experience

**Cyber Physical Systems Group**, **USC** Sep. 2022 – Present

**Undergraduate Research Assistant**, Professor Paul Bogdan

* Predicting and mitigating seizures by designing and controlling fractional-order networks.
* Performing signal processing on discrete-time linear fractional-order dynamical systems using fractional differential equations.

**Viterbi Information Sciences Institute**, **USC** Jun. – Aug. 2022

**Research Intern**, Visual Intelligence and Multimedia Analytics Lab (VIMAL)

* Programmed Arduino Mega 2560 to function as a transmitter of commands to an autonomous system.
* Used computer vision and machine learning to passively track a mannequin head in 3D in real-time.
* Compared the computer vision measurement against the true motion as a proof of concept.

**Aerodynamics Design and Research Lab (ADRL)**, **USC** Jan. - May 2022

**Lab Assistant,** Professor Alejandra Uranga

* Designed a third-order Chebyshev low-pass filter
* Aimed to test the filter inside a Dryden wind tunnel to remove the turbulence caused by the drag force on an aircraft’s wing.

# Publication

## Conference Proceeding (in preparation)

[1] **Predicting and Mitigating Seizures by Designing and Controlling Fractional-Order Networks.**

Emily Reed,

# Awards and fellowships

**Undergraduate Research in Viterbi Engineering (CURVE) Fellowship recipient** Sep. 2022

* Nominated by a faculty member.
* Award is given to only a handful of high-achieving students each year.

# Presentations and workshops

**Viterbi Undergraduate Symposium (Upcoming)**  Apr. 2023

* Paper Title: Predicting and mitigating seizures by designing and controlling fractional-order networks

# Professional Affiliations

**AeroDesign Team at USC** 2021-Present

* Working on Designing, building, and flying RC planes. Also, gaining hands-on experience and providing an approach to understanding UAVs.

**3D Design for Everyone (3D4E) at USC** 2021-Present

* Working in a team to use 3D printing techniques to build glider flights, and prosthetic hands.

**COMPUTER SKILLS**

**Programming:** Python, C++, C, Verilog, MATLAB, JavaScript, R

**Applications:** Simulink, ModelSim, Xilinx Vivado, Fusion 360, LTSpice, Git

**Embedded Systems:** SoCs, Arduino, RaspberryPi

**Other Skills:** Control systems, Linear and Non-linear systems, Signal Processing,

Brushless motors, Servo motors

# Languages

**Arabic:** Native Language

**English:** Native Language

**German:** Intermediate Listener, Novice Speaker

**Turkish:** Professional Speaker and Listener