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]

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