

Yawen Liu

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EDUCATION

University of Southern California

Aug. 2018–May 2022

Bachelor of Science in Electrical Engineering

Bachelor of Science in Applied and Computational Mathematics

Cumulative GPA: 3.868

Cumulative EE Major GPA: 4.000

Related Coursework:

- Analog and Digital Integrated Circuit Design, Electromagnetics
- Digital Signal Processing, Linear System
- Embedded System, Distributed Systems for the Internet of Things
- Linear Algebra, Statistics and Probability, Numerical Theory, Mathematical Analysis

PUBLICATIONS

Texture Classification by Crossmodal Congruence

First Author

Expected Submission: Oct. 2021

- Propose an algorithm using Euclidean distance and eigenimages for correlation analysis of real synchronized sound and vibration signals in texture classification.
- “Texture Classification by Crossmodal Congruence.” *IEEE Haptics Symposium 2022*. (Expected Submission for Initial Review).

RESEARCH EXPERIENCE

EE 494a/b Undergraduate Thesis

Aug. 2021–Present

Student Researcher

- Undertake a two-semester research project and publish it.
- Start a project based on an existing Owllet localization system using microphone arrays and stencils as passive filters, under the supervision of Prof. Bhaskar Krishnamachari.

Research at ACME Lab

May 2021–Present

Student Researcher

- Help building a wireless communication system for a project of Biosensing. Solder, program and test an oscillator through SPI and an AVR microcontroller for a miniature PCD as part of a project.
- Simulate a three-axis localization system by evaluating the EM field of a smart pill PCB received from a set of 3-dimensional coils in ANSYS simulation.
- Design and improve a machine-learning model to convert EM fields data from to predicted 3D coordinates.

Research at HaRVI Lab and Viterbi Summer 2020 Research Program

May 2020–Present

Student Researcher

- Participate in a research project on haptic interactions and related applications in VR.
- Develop quantitative algorithms to analyze the correlation of sound and vibration signals.
- Analyze power spectral density and spectrogram of synchronized signals. Design a novel metric for texture classification by defining a frequency-to-frequency spectral analysis.
- Run classification tests and build machine-learning predictive models for data analysis.
- Evaluate estimator performance by performing GroupKFold to exam classification models.

USC Autonomous Underwater Vehicle Design Team

Sep. 2018–Sep. 2020

Electrical Team Member

- Designed an autonomous underwater vehicle, collaborating industry standard programs.
- Tested and analyzed a sonar system with microphone arrays to measure displacements by phase difference.
- Led a project developing an IMU-based tracking system to track displacements with 3D coordinates.

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EXPERIENCE

2nd placed team in the USC Race-On Competition 2020 Jan. 2020–Apr. 2020

Participant

- A competition involves hardware-software development of a self-driving racing car.
- Participated as the only undergraduate students' team in a competition directed to master students.
- Built a racing car model and revised mechanical structures for better performance.
- Developed and tested a PID control algorithm for a self-driving car.

EE141 Applied Linear Algebra

Aug. 2019–Dec. 2019

Course Producer

- Hosted weekly office hours helping students with homework, exam review, and conceptual questions.
- Led lab sections with a graduate TA, helping students to learn applications related to course materials.

SKILLS

Technical Skills:

- Programming in C, C++, MATLAB, Java, Python and Elementary Proficiency in Assembly Language, Verilog, and R.
- HFSS, MATLAB, LTSpice, Cadence, MPLAB X IPE, Modelsim, FreeCAD.

LEADERSHIP & INVOLVEMENT

USC Math Club

Executive-Board Member, President

Feb. 2021–Present

Executive-Board Member, Event Coordinator, Treasurer

Sep. 2018–Jan. 2021

- Host undergraduate math research panel, career panel, and mentorship program.
- Organize team participating in Putnam competition.
- Develop and strengthen a friendly USC Undergraduate math community.

Anatomical Drawing Society, Figure Drawing Club

Club Member

Sep. 2018–Present

- Practice figure drawing skills, creating sketches and illustrations of models.