Alex Elliott

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EDUCATION

California Polytechnic State University, San Luis Obispo   GPA: 3.91
Master of Science in Electrical Engineering   June 2025
Bachelor of Science in Electrical Engineering   June 2024

PROJECTS

Master's Thesis: "Nonlinear Integral Control Schemes for a Cadence-Heartrate Process"   Jan 2025 – June 2025
- Researched nonlinear control methods building on findings from another student's thesis
- Derived nonlinear control system that gives the user a cadence signal to drive their heartrate to within a desired range
- Incorporated a nonlinear cadence-heartrate plant model for the human cardiovascular system's response to exercise
- Simulated the response of the human "plant" to various control system designs using MATLAB Simulink

Digital Audio Synthesizer (Team Project)   Sep 2023 – June 2024
- Collaborated with a partner to design an audio synthesizer based on the STM32F746G discovery board
- Developed oscillators, filters, envelopes, LFOs, and other effects using digital-signal processing (DSP) in C language
- Integrated multiple external components, including MIDI input circuitry and Adafruit encoder boards
- Programmed handlers for MIDI input, I^2C communication with Adafruit encoder boards, and the WM8994 DAC

Lightshow Synchronized to Music   Dec 2016 – Present
- Built eight lighting controllers from ESP8266 and ESP32 MCUs and programmed them via Arduino IDE to receive DMX data from Vixen Lights and Falcon Pi Player software over Wi-Fi using sACN (e1.31) protocol and interface with various types of lighting elements including relay-controlled string lights, WS281x LEDs, and P10 LED panels
- Designed and built many lighting elements such as a snowflake, matrix display, leaping arches, and a "Mega-Tree" using WS2811/WS2812b LEDs

WORK EXPERIENCE

Audio Visual Tech II   June 2022 – July 2025
Associated Students Inc., Cal Poly | San Luis Obispo, CA | Part Time (~15 hrs/wk)
- Set-up and operated audio-visual equipment (microphones, audio, projection, displays, lighting) for clients' events
- Communicated with clients to determine their audio-visual needs and acted as primary AV Tech at assigned events
- Trained new Techs, created "one-sheet" manuals and training videos for lighting control systems, maintained and repaired AV equipment, and "troubleshot" and resolved issues as they arose

Audio Visual Student Assistant (Tech I)   Oct 2021 – June 2022
Associated Students Inc., Cal Poly | San Luis Obispo, CA | Part Time (~10 hrs/wk)

Service Production Coordinator   Feb 2019 – Oct 2022
The Rock of Roseville | Roseville, CA | Part Time (~6 hrs/wk)

RELEVANT COURSEWORK

Electric Circuit Analysis	Electronics Manufacturing and Circuit Analysis Laboratory
Signals and Systems	Digital Signal Processing
Digital Logic Design	Computer Design and Assembly Language Programming
Classical Control Systems	Digital Control Systems
Control Systems Theory	Advanced Topics in Automatic Control
Stochastic Processes	Industrial Power Control and Automation
Electromagnetic Fields and Waves	Energy Conversion and Electromagnetics
Intro. to Communication Systems	Digital and Analog Electronics and Integrated Circuits
Semiconductor Device Electronics	Microcontroller-Based Systems Design
Electronic Design	Music Technology: Recording, Synthesis, and Production
Advanced VLSI Design	Computer-Aided Design of VLSI Devices

Analog Filter Design   Discrete-Time Filters
Computational Intelligence

SKILLS

Arduino IDE	Audio Mixing	Audio-Visual Tech	Control Expert PLC/PAC Software
C/C++ Programming	Client Communication	Keysight ADS	KiCad PCB Design
EE Lab Equipment Usage	Lighting Design	Linux OS	LTSpice Circuit Simulation
MATLAB & Simulink	Microsoft Word	Microsoft Excel	Oscilloscope Usage
Prototyping & Soldering	STM32Cube IDE	State-Space Models	Verilog/SystemVerilog
Xilinx Vivado	3D Printing		