

Alex Elliott

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EDUCATION

California Polytechnic State University, San Luis Obispo
Master of Science in Electrical Engineering
Bachelor of Science in Electrical Engineering

GPA: 3.91
June 2025
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
- Used MATLAB Simulink to simulate the response of the human plant to various control system designs

Digital Audio Synthesizer Sep 2023 – June 2024

- Designed an audio synthesizer based on the STM32F746G discovery board, integrating multiple external components
- Implemented oscillators, filters, envelopes, LFOs, and other effects using digital-signal processing (DSP) in C language
- Programmed handlers for MIDI input, I2C communication with Adafruit's encoder boards, and the WM8994 DAC

Lightshow Synchronized to Music Dec 2016 – Present

- Built multiple (~8) lighting controllers from ESP8266 microcontrollers and programmed with Arduino IDE to receive DMX data over Wi-Fi via sACN (e1.31) protocol from Vixen Lights and Falcon Pi Player software and interface with various types of lighting elements, including relay-controlled string lights, WS2812b LEDs, and P10 LED panels
- Designed, soldered, and built lighting elements such as “leaping arches” and a “Mega-Tree” using 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 “troubleshoot” 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
C/C++ Programming
Lab Equipment Usage
MATLAB & Simulink
Prototyping & Soldering
3D Printing

Audio Mixing
Client Communication
Lighting Design
Microsoft Word
STM32Cube IDE

Audio-Visual Tech
Keysight ADS
Linux OS
Microsoft Excel
Verilog/SystemVerilog

Control Expert PLC/PAC Software
KiCad PCB Design
LTSpice Circuit Simulation
Oscilloscope Usage
Xilinx Vivado