

Matthew Yu

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🌐 https://github.com/dimembermatt

Education

The University of Texas at Austin

May 2021

B.S. IN ELECTRICAL AND COMPUTER ENGINEERING

- Cumulative GPA: 3.34
- Coursework: Intro to Embedded Systems, Software Design and Implementation I, Circuit Theory, Dev. of a Solar Powered Vehicle, Digital Logic Design, Computer Architecture, Software Design and Implementation II

Projects

Image Generation - C++

January 2019 - Present

- Built an application using OpenFrameworks that creates art based on Markov Chains generated from image sets.
- Developed a median cut algorithm implementation for color quantization.
- Optimized program structures and processes for efficiency improvements of over 90% in runtime.

Generative Art - C++, Javascript, HTML, CSS [dimembermatt.github.io/Generative_Art](https://github.com/dimembermatt/Generative_Art)

Summer 2018 - Present

- Created a series of programs that create generative art based on rules or natural phenomenon using P5JS and OpenFrameworks.
- Document thought processes and results as part of an effort to better communicate code and algorithms to people.

Audio Visualizer - Javascript, HTML, CSS [dimembermatt.github.io/Web-Audio-Visualizer](https://github.com/dimembermatt/Web-Audio-Visualizer)

Summer 2018

- Co-programmed an audio visualizer that uses P5JS and WebAudio API to load MP3s and depict various visuals based off the rhythm.
- Worked on creating the initial design, as well as wrote the working prototype of the visualizer using a particle system.

Intro to Embedded Systems Final Project - C, Python

May 2018 - Present

- Led the firmware design and circuit implementation of an embedded system game controller using the TI TM4C microcontroller.
- Programmed a game implementing the battling features of Pokémon against a CPU.
- Rework an idea using Python and OpenCV to transcribe sheet music into a decodable file format that plays on MusicBox, a program that plays tunes from the game controller.

How Things Work Pet Feeder Project - Arduino, SOLIDWORKS

May 2018

- Led the programming of the Arduino UNO microcontroller and the electronic component interfacing.
- Used SOLIDWORKS to create the initial pet feeder design and contributed to the iterative design process for customer needs and technical problem solving.

HelloTree - C

March 2018

- Created a C game in which the user attempts to grow a tree while responding to events and choices that impact its growth.
- Implemented a pointer array to locate and read information from populated text files. The information is parsed to obtain event flavor text, choices, and effects.

Degree Planner and Audit Program - C

January 2018

- Created a program that allows the user to read and populate text files with official coursework and planned coursework as well as check the GPA and rate of progress to diploma. Users can add, remove, and edit courses.

Intro to Electrical Engineering Final Project

November 2017

- Led the fabrication of a robot car and its circuit design as well as helped debug the robot during testing in order to navigate a rudimentary obstacle course.

Extracurricular Activities

IEEE Robotics and Automation Society

Fall 2017 - Present

MEMBER, LEADER, HISTORIAN AND JUNIOR WEBMASTER (SPRING 2019)

- Region V (Fall 2017 - Present)
 - Participated in the mechanical design and assembly for the 2017-2018 robot.
 - Lead the DBSCAN and simulator groups for the computer vision stack of the 2018-2019 robot.
 - 10th place out of 30 during the IEEE Spring 2018 conference.
- Micromouse (Present) - Lead the maze-solving algorithm development and integration with the Micromouse.
- Robotathon (Fall 2017, 2018)
 - RASCar 2017 - Led the mechanical fabrication and design of the group's 2nd RASCar robot, "Picobot".
 - * Undeclared champions in competition
 - RASumo 2018 - Wrote sensor interfacing tutorials and helped host the competition as the DJ and streamer.
- PacBot (Spring 2017) - Worked with the sensor integration and testing with the "Buster".
 - 3rd place at the competition hosted by the Harvard Undergraduate Robotics Club.
- RAS Leader (Present) - Participate in organizational decisions and responsibilities, including volunteering
 - Elected as Historian and given duties as junior Webmaster for Spring 2019 Semester
 - Volunteered to build LEGO fields at ARM for the 2017 First LEGO League Hydro Dynamics challenge.
 - Volunteered as a judge for the 2018 Capital Area Divisional STEM Competition.
 - Volunteered to help sort garbage for Sustainability Sort Squad after UT's football games.

Longhorn Racing - UT Solar Vehicle Team

Fall 2018 - Present

MEMBER, SOLAR ARRAY LEAD (2019)

- Elected as Solar Array lead and official representative for the 2019 season.
- Lead the assembly of solar cells into modules for lamination and application onto BeVolt.
- Developed milling, laminating, and SMD soldering skills.
- Helped build the lamination and testing setup for solar cells and modules.
- Work featured in a video for Silicon Labs.

American Society of Mechanical Engineers

Fall 2017 - Present

MEMBER

- Rube Goldberg/Design Team (Fall 2017 - Present) - Designing multistep processes for STEM education and competition.
 - Rube Goldberg National Competition (2018) - 6th place.
 - Volunteered at Cockrell Con to showcase Rube Goldberg Club's machine.
 - Helped design, construct, and setup a Rube Goldberg Machine for an advertising commercial by energy company Reliant.
 - Submitted a proposal and presentation with the Design Team to the APICS International Supply Chain Case Competition.

Skills

Programming Languages	C/C++, Java, Python 3, Arm Thumb2 ASM, JavaScript
Markup Languages	HTML (and CSS), XML, Markdown, LaTeX (TeX)
General Skills	Microsoft Office, Google Suite, SOLIDWORKS, Git, Github, Linux OS
Technical Skills	SMD Soldering, Milling, Lathing, Laser Cutting, 3D Printing