# Matthew **Yu**

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## 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, 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**    *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**    *Summer 2018*

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

**Intro to Embedded Systems Final Project - C, Python**                                                     *May 2018 - Present*

- Led the firmware system 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.
- Designing a framework 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.

**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.

## Extracurricular Activities

**Longhorn Racing - UT Solar Vehicle Team**                                                                     *Fall 2018 - Present*

MEMBER, SOLAR ARRAY LEAD (2019)

- 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.

**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.
    - Led the DBSCAN and simulator groups for the computer vision stack of the 2018-2019 swarm robots.
    - Solder electronics and headers to the PCBs of the swarmbots
- 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 place RASCar robot, "Picobot".
    - RASumo 2018 - Wrote sensor interfacing tutorials and helped host the competition as the DJ and streamer.

**American Society of Mechanical Engineers**                                                                     *Fall 2017 - Present*

MEMBER

- Rube Goldberg/Design Team (Fall 2017 - Present) - Designing multistep processes for STEM education and competition.
    - 6th Place in the Rube Goldberg National Competition (2018).
    - 3rd Place in the Purdue National Chain Reaction Competition (2019).
    - Helped design, construct, and setup a Rube Goldberg Machine for an advertising commercial by energy company Reliant.

## Skills

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|---|---|
| **Libraries, APIs, and Software** | ROS, OpenFrameworks, P5JS, Craftware, SOLIDWORKS, Xilinx Vivado |
| **Programming Languages** | C/C++, Java, Python 3, Arm Thumb2, LC3B, JavaScript, Verilog |
| **Markup Languages** | HTML (and CSS), XML, Markdown, LaTeX |
| **Technical Skills** | SMD Soldering, Milling, Lathing, Laser Cutting, 3D Printing |
| **General Skills** | Microsoft Office, Google Suite, SOLIDWORKS, Git, Github, Linux OS |