# Ajay Vincent Miranda

(530)-761-6023 | avmiranda@ucdavis.edu | linkedin.com/in/ajaymiranda/ | Davis, CA

## Education

**University of California, Davis** **Graduation: June 2020**

Bachelor of Science, Major: Computer Engineering

**Relevant coursework:** Embedded systems, Operating Systems, Computer Architecture, Algorithm Design and Analysis, Gameplay programming, Data Structures and Algorithms, Advanced Digital Systems, Object Oriented Programming, Human-computer interaction, Technical Writing

## Projects:

**AWS application notification system** **Apr 2020-May 2020**

- Developed an application on a TI CC3200 microcontroller to notify a user via SMS for a game application
- Utilized the I2C communication protocol to read rapidly varying accelerometer values
- Extrapolated the accelerometer values to display a moving pixelated ball on an OLED with the SPI protocol
- Triggers a RESTful API call to the AWS online panel upon detection of the game's ending
- Integrated the SNS and MQTT protocols to send the parsed JSON message to the user's mobile phone

**User Level Thread library:** **Feb 2020-Mar 2020**

- Developed a user level thread library utilizing a queue container API in the C programming language
- Enables a user level application to create and run new threads in the same process including termination
- Performs context switching to resolve imminent concurrently running thread executions
- Implemented an established generalized lock primitive(semaphore) to handle multiple threads including providing safe, mutually exclusive access to the critical section for existing threads
- Designed a memory efficient mechanism to provide private storage for each thread

**Senior design autonomous vehicle:** **Oct 2019-Mar 2020**

- Designed and built an autonomous vehicle in a team of four that uses a camera sensor to follow a lined track for the best time, automatically stopping at the marked finish point.
- Programmed the control algorithm on the OpenMV microcontroller using Python with image processing detection capabilities to identify the regions of interest discerning the path from the surroundings.
- Incorporated the proportional and derivative terms for the PID model controller to prevent oversteering, understeering on turns and oscillation on linear paths.

**Visual novel video game:** **Oct 2019-Dec 2019**

- Developed an interactive storyline based visual novel game in a team of four with the Unity game engine.
- Leveraged core methodologies of game development including handling input, branching dialogue trees, poly-dimensional scaling, animation, testing and game feel
- Designed the game-logic necessary for spatial 2D coordinate movement, adapted for the narrative
- Utilized C# to script with the object-oriented programming paradigm, serialized to link with game objects

**Seat reservation system - SacHacks Intercollegiate Hackathon:** **Nov 2018**

- Designed a seat reservation system to solve the inconveniences of occupied public spaces
- Utilized HTML,CSS,Javascript to develop the front-end of the web application
- Integrated the Linux based Qualcomm DragonBoard 410C SoC computer for pressure detection through a back end python script with proximity sensors
- Incorporated the ultrasonic sensors using the Arduino UNO microcontroller
- Awarded the "Best IOT hack" award by Major League Hacking, SacHacks' sponsor

## Relevant skills:

- Software: Python, C, C++,C#, Linux, Unity, Git, Code composer, React, OpenGL, HTML,CSS
- Hardware: TI CC3200 microcontroller, Qualcomm DragonBoard, Arduino UNO