**The Matrix**

**High Level Description**

A fun dodge and collect game where you must find ways to maneuver through your enemies in order to collect ‘energy orbs’ to gain points.

Controlled via a joystick, the game is on an LED matrix, and game information is displayed on an LCD screen.

**User guide (rules, controls)**

Control a blue 2x2 square on the 8x8 LED Matrix via a joystick. Collect the other blue ‘energy orbs’ on the matrix for points. Avoid the red ‘bullets’ being fired at you. When you get hit, you lose. When you die, you can push the joystick button to reset the game. Your score and enemy count are displayed on the LCD screen.

**Technologies and components used**

8x8 LED Matrix: GTM2088ARGB-28

LCD Screen: LCM-S01602DTR/M (Use of custom characters)

Joystick: SS-944

**Demo video**

<https://www.youtube.com/watch?v=dqpr-745_mU>

**Source Files**

[io.c](https://docs.google.com/file/d/0B5gWAFG3HXllS0xWemFvZ1FqMlE/edit)

Contains easy-to-use functions for the LCD wired up with the shift register

[lcd\_customchar.c](https://docs.google.com/file/d/0B5gWAFG3HXllb2dQclpQS04ycGs/edit)

Contains a function to put custom character arrays onto the LCD and custom character arrays that I use in the project

[timer.h](https://docs.google.com/file/d/0B5gWAFG3HXllbmg0U2pjbWl0VVk/edit)

Contains functions to set up and use the Timer ISR

[rlaw001\_project.c](https://docs.google.com/file/d/0B5gWAFG3HXllM05TM1RaS1YzdzA/edit)

The main project with all the state machines and such