

Arcade Game: Connect 4

ECE 153B Final Project

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Overview:

For this project, I propose to create an arcade gaming machine to play the two player game: Connect 4. The game will be played on an 8x8 RGB LED matrix controlled by an arduino. Each player will use the wii nunchuck's joystick to select the square to play and its trigger to confirm the selection. The players will also interact with the arcade through bluetooth connection. Once a game is won/tied, the players will have to reset the game on a terminal. Additionally, players can check each player's games won on the same terminal with a text command.

Peripherals:

- Adafruit 8x8 RGB LED Matrix
- Wii Nunchuck
- Arduino (control 8x8 LED Matrix)

Protocols:

- I2C (communication for wii nunchuck, arduino)
- UART (bluetooth communication)

Software Design:

Using Adafruit's Neopixel library, the arduino will control the 8x8 LED matrix. The STM32L76 will communicate with the arduino using I2C to dictate which LEDs to light up or make blink. The wii nunchuck will be connected to the STM32L76 and communicate using I2C. The joystick data will control which square to play and the trigger will confirm that decision. Bluetooth commands are "reset" and "stats" to reset the game at input or to display player one and player two win counts. All game logic will be

Goals:

- Connect Arduino and STM32L76 through I2C and have message passing
- Light up specific RGB LEDs through I2C communication
- Implement Connect 4 Game logic
- Implement bluetooth commands

Stretch Goal:

- Implement tic tac toe and have ability to select between the two games