UCR EE/CS 120B Spring 2015
Rock It Out - Musical Game
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High Level Description of Project

The embedded system features the ATmega1284 that runs the game, menus, and interfaces all devices together. The LCD display shows information and text for the menus and game. The shift registers control the LED Matrix and provide players intuitive feedback, such as what notes to play and their score in a bargraph form. The Arduino UNO uses a microphone to pick up the sounds and analyzes them through some basic algorithms detecting peaks and nodes; then, it sends out a 2-byte package with the frequency obtained to the ATmega1284.

User Guide

Button labeling (from left to right): Up, Down, Back, Select

- During startup, use the Select button to enter the menu
- Navigate through the menu using Up and Down buttons
- Select your options using the Select button
- For a soft restart in the middle of a game, use the Select button to end the game

Special considerations:

- While singing or playing music at the microphone, do not go further than 3 feet away
- Sustaining a note or repeating it will increase the accuracy of the reading from the microphone

Technologies and Components

- 1 X ATmega1284
- 1 X LCD Display
- 2 X Shift Registers
- 3 X Large Breadboards (830-pin)
- 1 X LED Matrix - Dual Color
- 1 X Arduino UNO
- 1 X Microphone
- Programmer: 1 X OLIMEX AVR Programmer, and 1 X ICSP Adapter Board
- Power: 1 X 5V Power Supply Board, and 1 X 6V 1A Power Adapter
- Assorted components: Jumpers, 8 X 330 ohm Resistors, 1 X 10K ohm Potentiometer, 4 X Tactile Buttons
- Software: AVR Studio 6.2 and Arduino IDE 1.6.3

Link to Demo Video

https://youtu.be/1uPxHBodMcQ

Link to Source Files

https://github.com/agenteaty007/Rock-It-Out