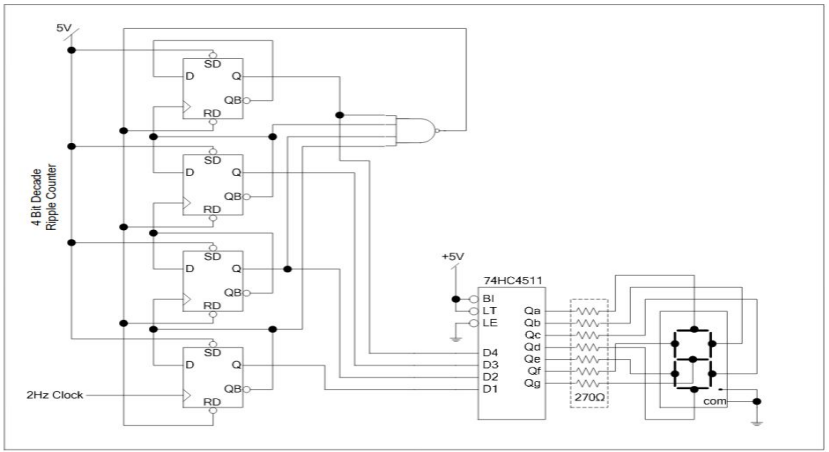
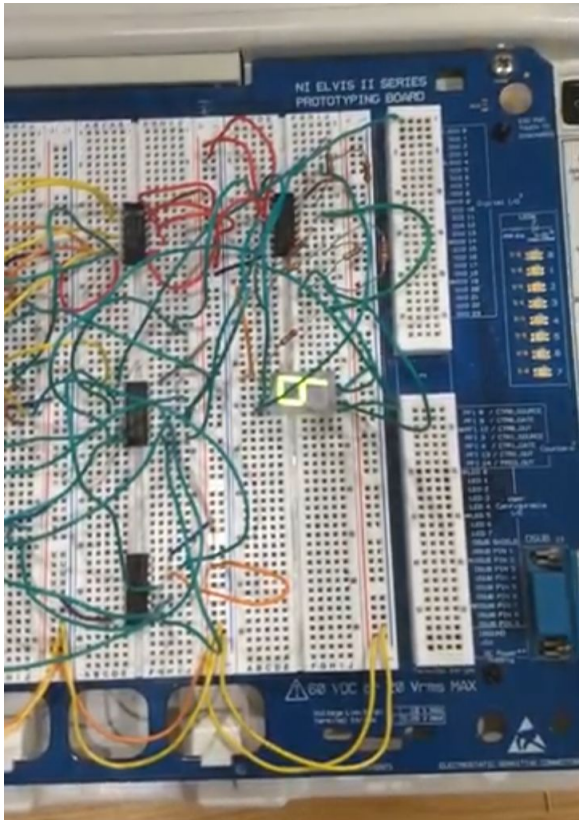
Shao-Peng Yang's Portfolio

BS of Electrical Engineering- Electronics Concentration
https://spypaul.github.io/Shao-Peng-Yang/

Project - Decade Counter

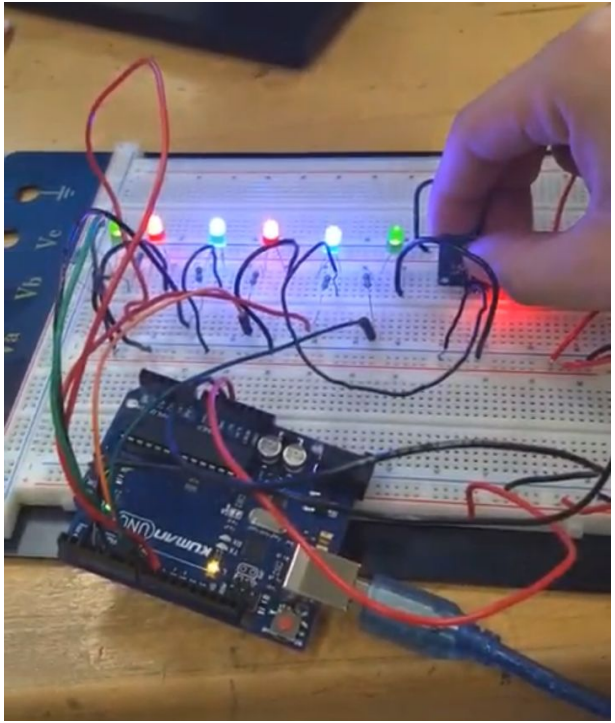
- Use the D flip flops, Nand Gates, and BCD to 7-segment decoder
- The picture at the bottom is the schematic for the circuit; the picture on the right is the circuit built
- The Project was built in 20 - 30 minutes





Project - IDEA Ardunio LED Workshop

- The workshop is designed for the Industrial Design Students to have the basic knowledge of LED, circuits, and programming
- The picture on the right shows the final project designed for the IDEA Arduino LED Workshop
- It gave the attendees a general idea on how to utilize Arduino into their Lantern Projects



Project - Square Wave Generator

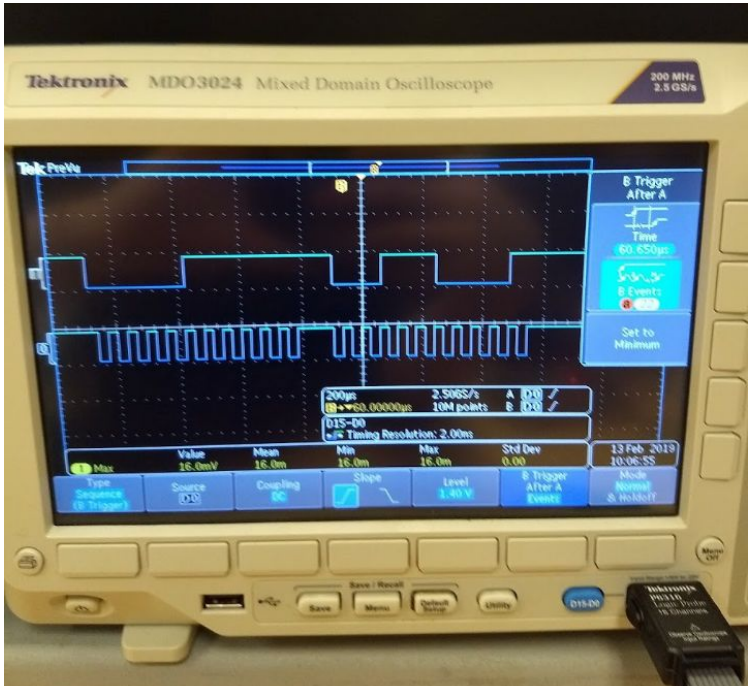
- Create a square wave generator with a terminal interface to control the frequency of the signal
- Use the "bit-banging" method on a GPIO port generates the square wave with a certain frequency
- Involve the understanding of the frequency of the MCU and the period of each assembly command is needed
- For more details, please check https://github.com/spypaul/Square-Wave-Generator.git

Project - Simple Stopwatch

- Create a simple stopwatch with the ability to change the counting frequency with peripheral switches and a button to halt the watch
- Configure and use the peripheral LPTTIMER by using "polling method"
- Involve creating a software loop to check the flags on the timer
- For more details, please check https://github.com/spypaul/Simple-Stopwatch.git

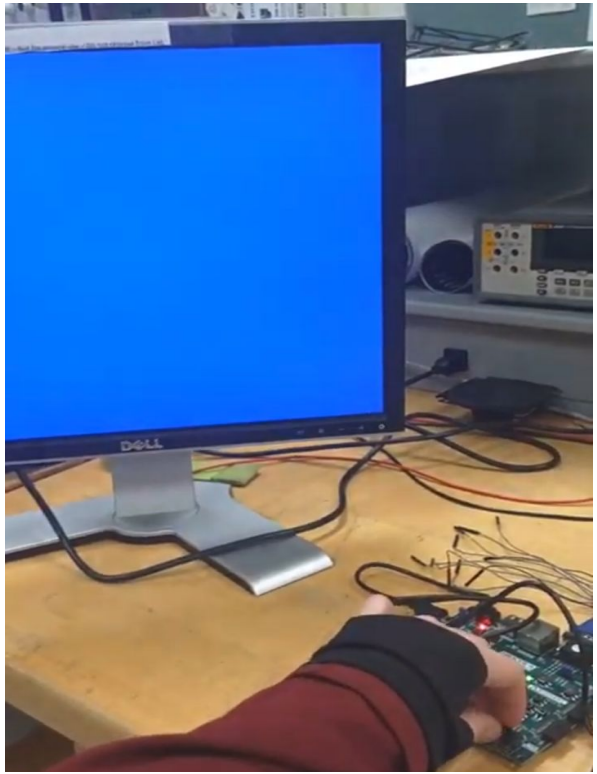
Project - Keyboard Reader

- Involve the usage of the USB HID interface on the Nexys 4 and the Ps2 protocol of the keyboard
- Create a 22 bits shift register to capture the key up code and the scan code
- Image on the right is the Signals from the keyboard
- For more details, please check https://github.com/spypaul/Keyboard-Reader.git



Project - VGA Controller

- This project involves the usage of the VGA port on the Nexys 4 and the VGA monitor.
- The switch on the Nexys 4 board will control the overall color of the screen
- The challenge of the project is to create proper Vsync and Hsync signal
- For more details, please check https://github.com/spypaul/VGA-Controller.git



Project - Paulaga Retro Video Game

- Recreated a Retro Video Game similar to the Well-known, Galaga
- State machines are created to determine the states of the objects in the game
- Create internal signals to represent the coordinates of the objects in the game
- For more details, please check https://github.com/spypaul/Paulaga-Retro-Video-Game.git

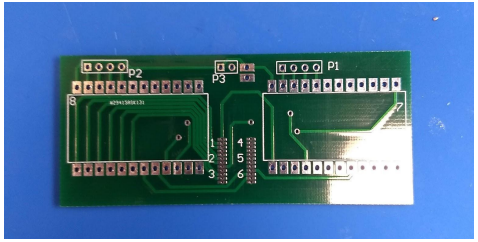
Project - Speech Recognition System

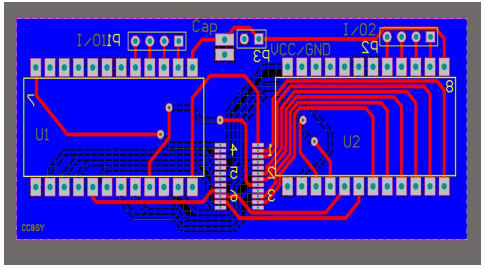
- The system can recognize five single words: "cookies", "fish", "hamburger", "pizza", and "special"
- Use the "cross-correlation" method to recognize the word by comparing input signals with pre-recorded data
- For more details, please check

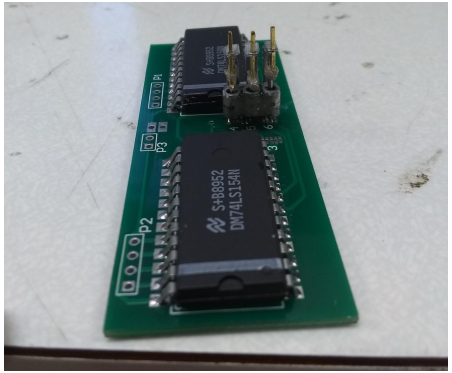
  https://github.com/spypaul/Speech-Recognition.git

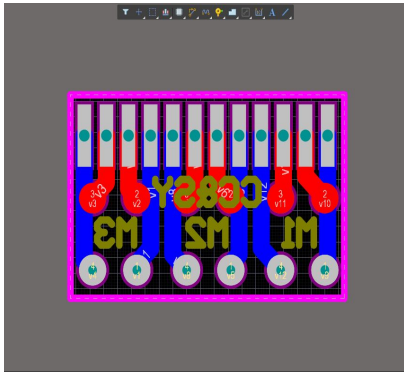
Project - Braille Cell Display Project

- Implement the Braille Cell Display design of an Industrial Design Student.
- Use mini motor and PCBs to create the display
- The pictures on the right are the PCB layouts and the inside circuit of the Display
- For more details, please check https://github.com/spypaul/Braille-Cell-Display-PCB.git



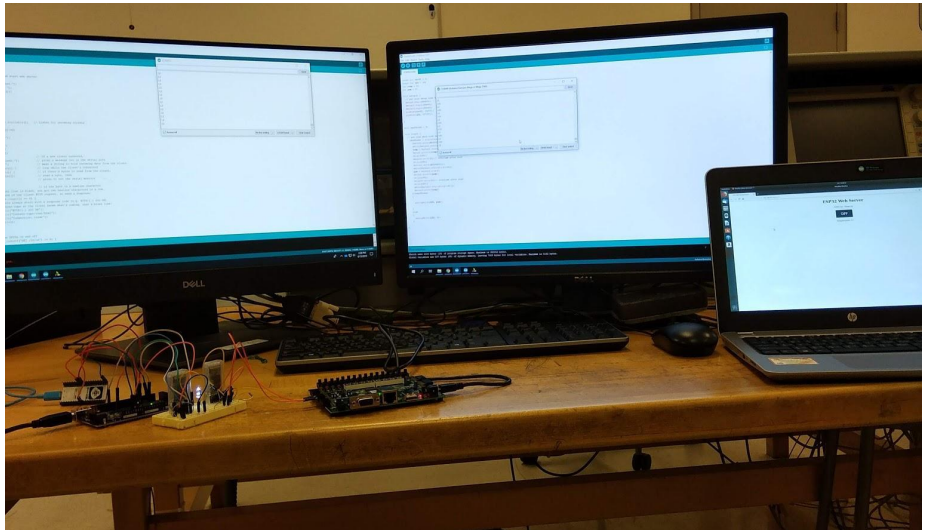






Project - IoT Wireless LED System

- There are three main parts of the system: the communication between Arduino and FPGA, LED control, and wifi web server
- Created a UART interface in Verilog on the Nexys A7 to drive the Bluetooth modules
- The picture on the right shows every components of the project
- For more details, please check https://github.com/spypaul/IoT-Led-System.git



Thank you for your time