TAIT

By Gustavo Correa

Introduction

TAIT is the leading company in the design and creation of portable and automated entertainment solutions for concert tour stages and art exhibits. TAIT was founded by Michael TAIT in 1978 and was originally a "live design and set construction entertainment rock n' roll staging company." Since then, TAIT has designed entertainment experiences for Michael Jackson, Rolling Stones, U2, Bon Jovi, and Deadmau5. TAIT has also created art exhibits for the Olympics and car companies. TAIT has over 600 employees spread across 8 locations in the United States, United Kingdom, and the rest of the world. TAIT has engineered and developed multiple command consoles that can be considered as an embedded system. These automation consoles control all motors/lights and sync them in real time with music.

Product Information

Q: I want to know specifically what product that they produce drew your attention to them. What makes it so interesting?

What drew my attention to Deadmau5's cube for his 2017 tour was the complexity of the cube that he had designed together with TAIT. Deadmau5's cube uses the TAIT Navigator, which is an embedded software automation platform. The cube has LED panels covering each surface and are motorized to expand and contract. The Navigator is the bridge that synchronizes the audio and all of the visuals in the show.

Technical Specifications

Describe the technical specifications of the embedded system:

The technical specifications for the Tait Navigator are not available but another product called **Acrobat G6** has a similar functionality.

- Capacity to control hundreds of axes with unlimited cues
- Dual redundant power supplies and dual processor boards
- OS – Windows® Embedded Standard
- Full 3D graphical simulation of cues in virtual mode allows shows to be plotted and viewed in simulation before the scenery is built.

Possible Project
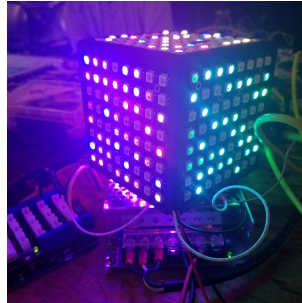
My goal for this project is to create an entertainment experience for anyone producing or playing music at a concert stage or venue. I will be building upon what I created for my CS120B Project.In my CS120B project I displayed the amplitudes of sound picked up from an AUX cord and microphone using my RGB LED Matrix Cube as the primary display device.

What I would like to do now is modify the cube idea so that each LED Matrix panel is motorized and is able to expand and contract on the cube. My goal is to have the music that's playing better synchronize with the lights and motors so that the bases and trebles of the song are visible on the cube. My inspiration came from Deadmau5's cube mentioned above.

LINK TO DEADMAU5 CUBE: https://youtu.be/JKjOJVRwfjg?t=7m17s

Technology to be used:
- **Atmega1284** to drive the servo motors that will be used to move the LED Matrix panels
- **Arduino Uno** to drive the **LED Matrix Panels**
- 2 INPUTS FOR MUSIC
    - **RaspberryPI/Mac** will have a music programming language called ChucK that will send MIDI OUT commands to the Arduino to signal when Bass/Treble notes are played
        - Music will be created using either the **ChucK programming language** or in a music production software called **Ableton**
    - **MIDI Keyboard** will be used as another input for music to be displayed on the Cube
        - During a typical show both recorded music and live music that is played will display lighting effects
        - The music that is played on the keyboard will drive patterns on the LED displays
- Music will be created so that the synchronization between music/lights/motors is more in time
- **SPI/UART communication** between all devices