

EMOTIONAL ARCHITECTURE

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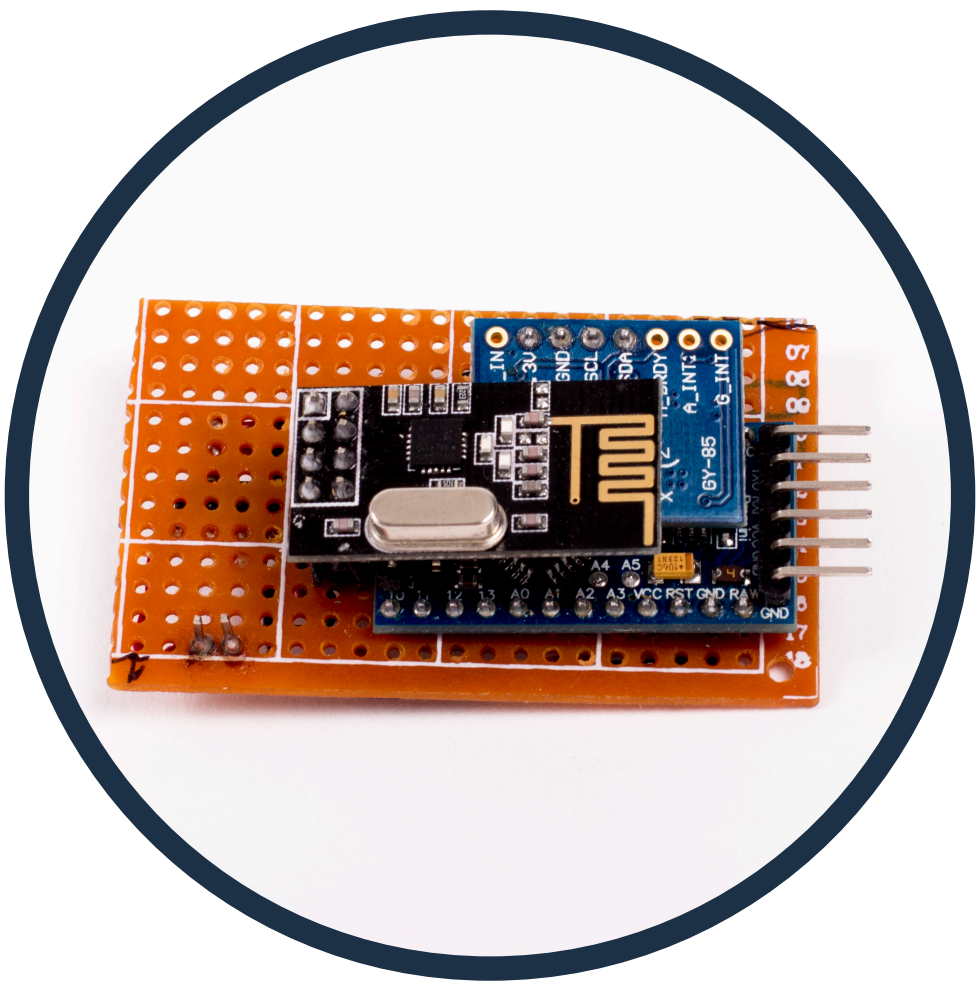
INTRODUCTION

Throughout time, dance has demonstrated the ways in which human motion can represent emotio in an abstract way. It is the subtle nuances of how the dancer moves that conveys the feeling of emotion, such as a slow or rapid movement.

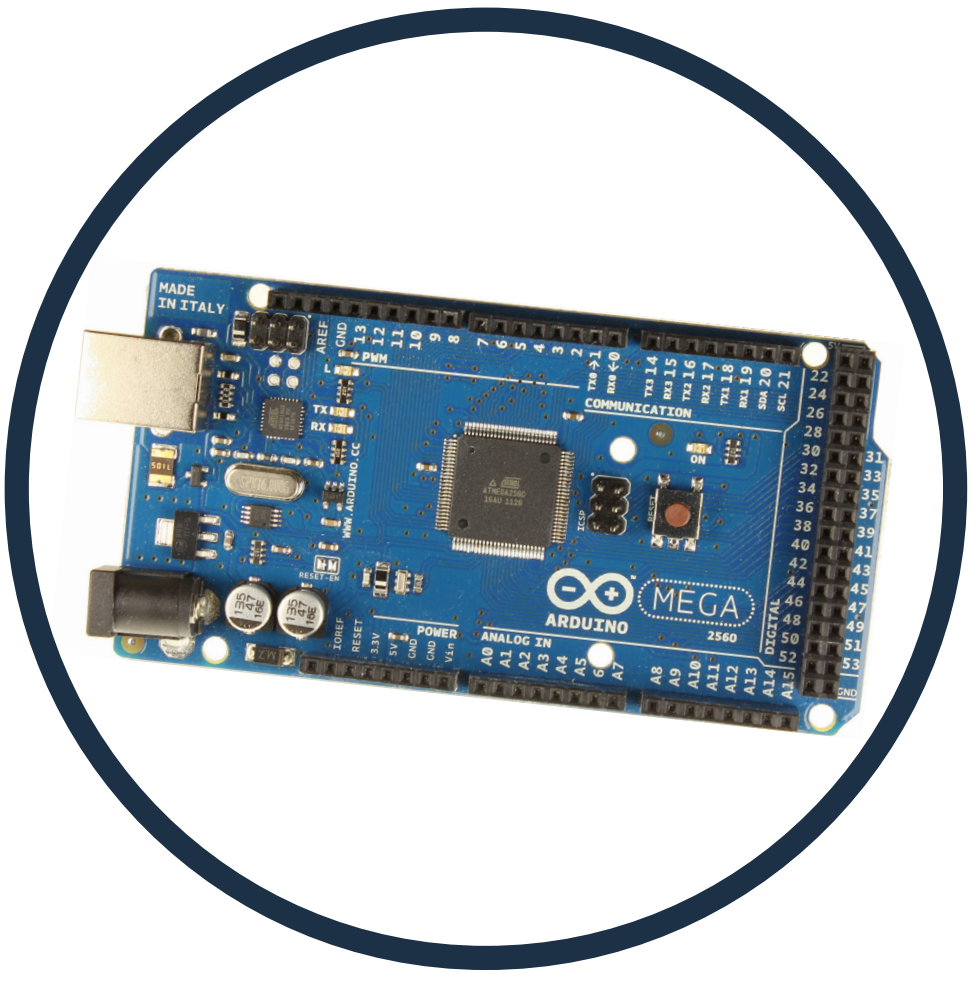
We then think, if it is possible to understand emotion from motion, why not express emotion through our surroundings. If a person is moving in a sad way, the building around them can change to make them happy. This idea has led to an art installation in which a dancer and architectural space are linked through both their emotions and motion. Users can experience the space without sight of the dancer, while other users can see both the dancer and the response of the architecture.

While research has shown it is possible to extract emotion from motion in various ways ^[1,2,5], this work first shows how emotional dance movement can easily represent distinct patterns through two axis of gyroscope data.

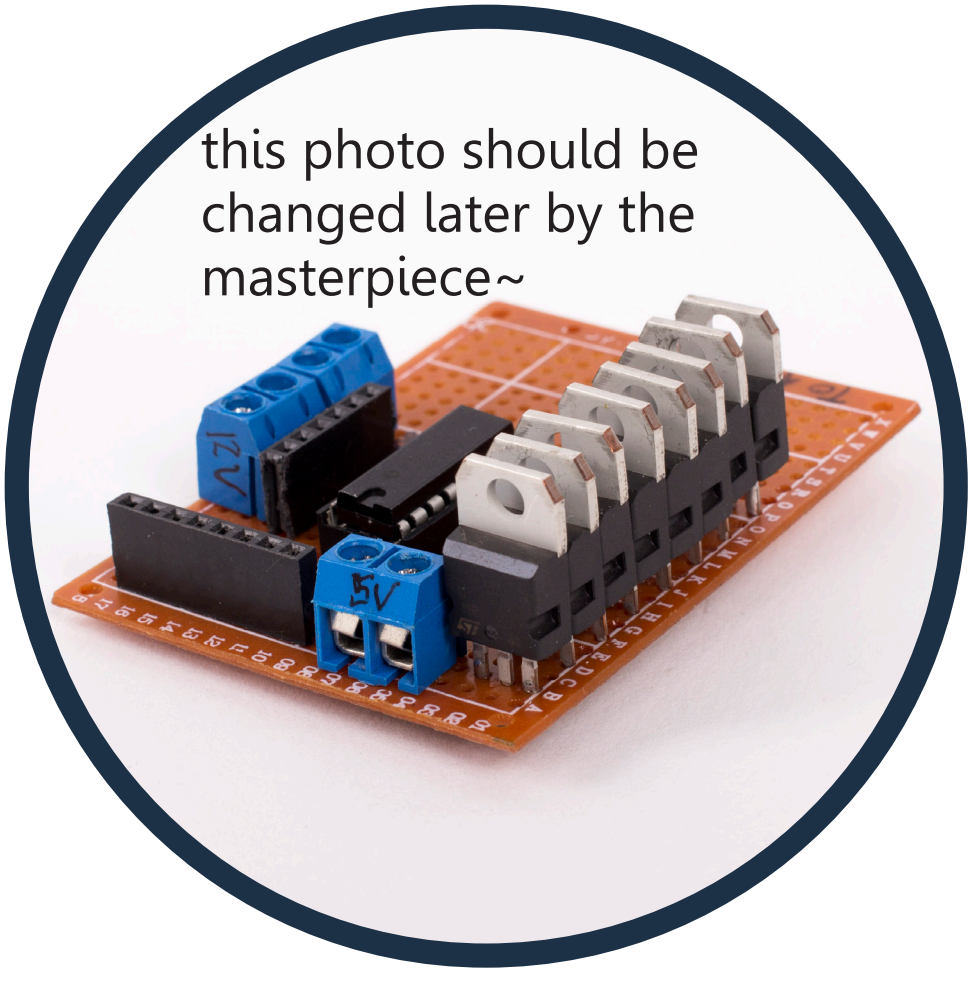
HARDWARE DESIGN



The system is comprised of two sections. First, the transmitters are worn on the dancer. Each transmitter consists of an arduino mini pro, GY-85 gyro/accl, and RF24L01+.



This group transmits at 2.4ghz to an arduino mega board with a RF24L01+ configured as the receiver.



this photo should be changed later by the masterpiece~

Some shift registers with a serial to parallel converter chip are used to control all the walls with the arduino mega board.

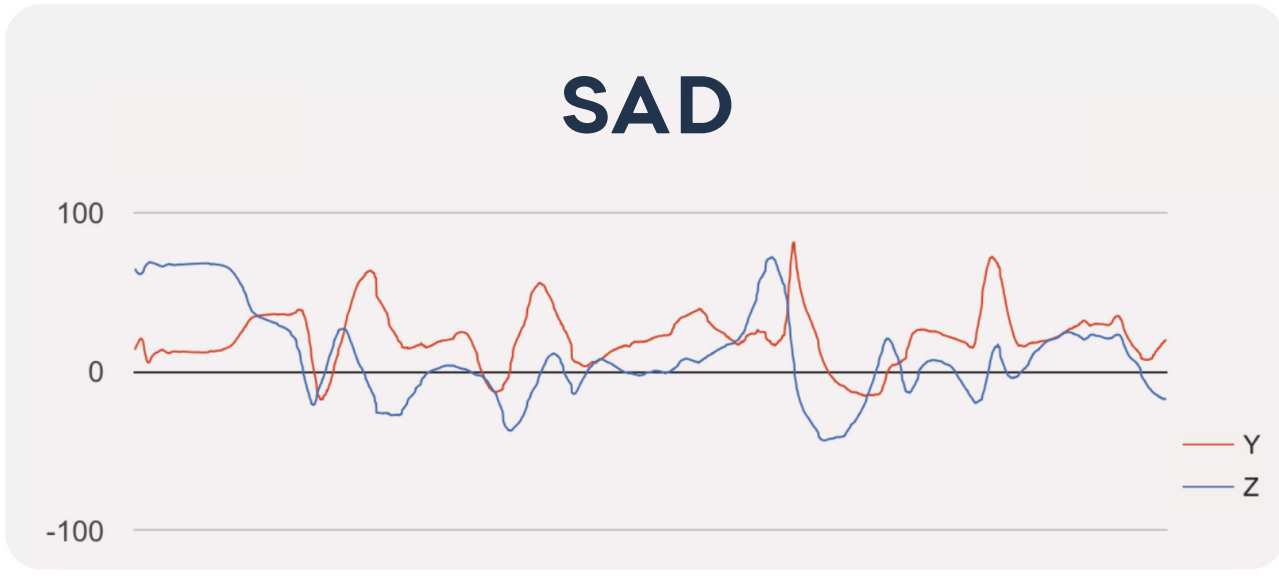
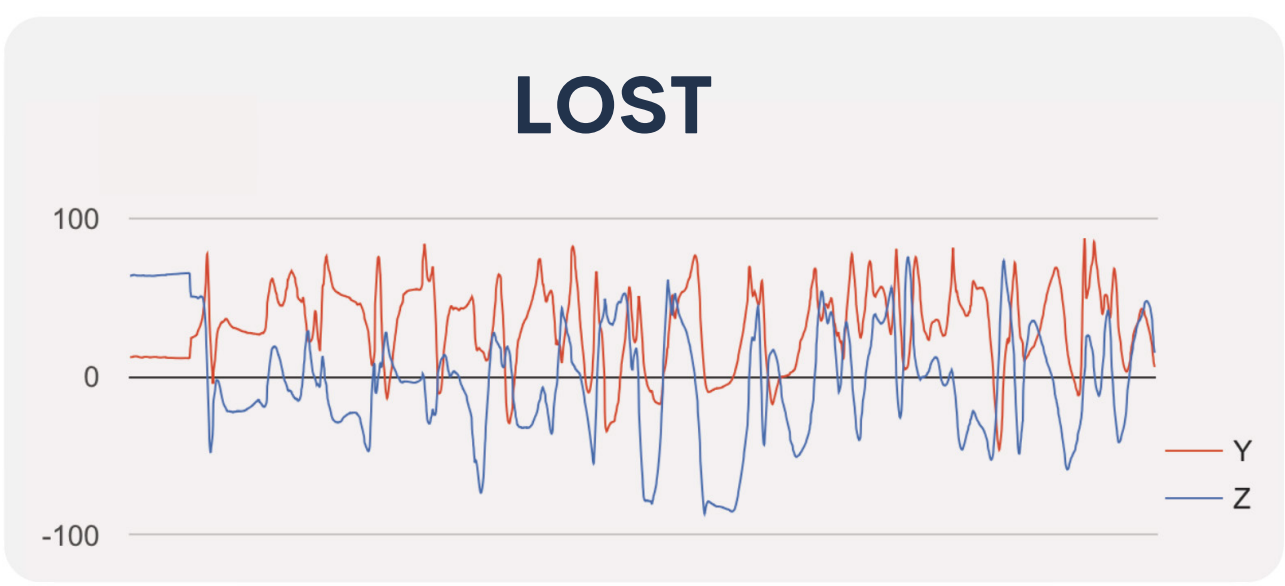
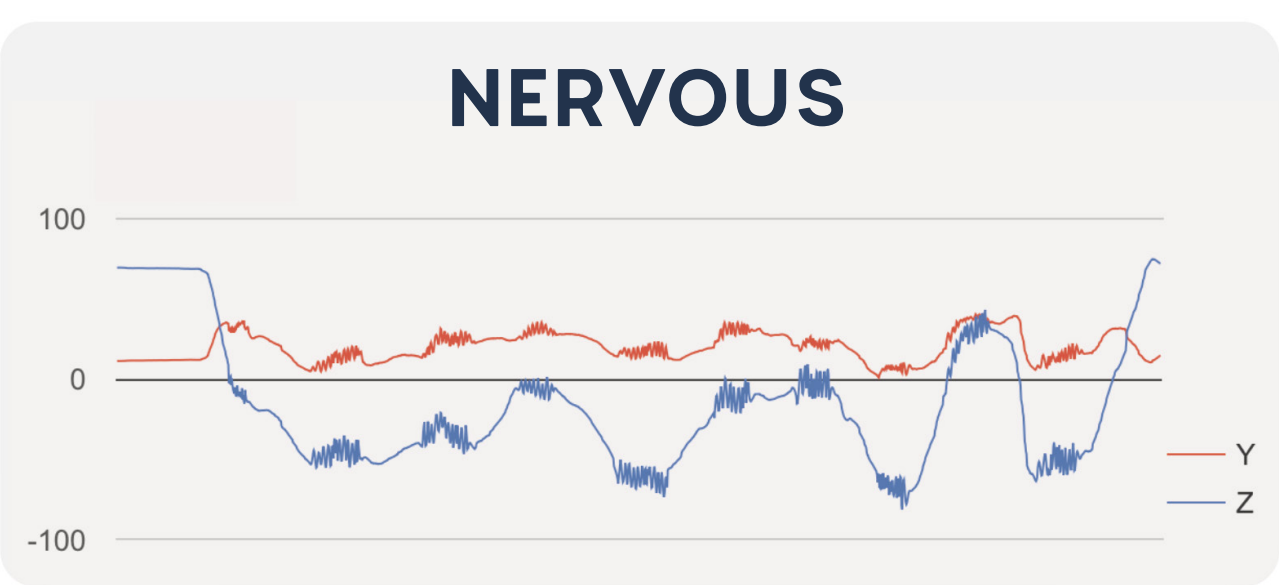
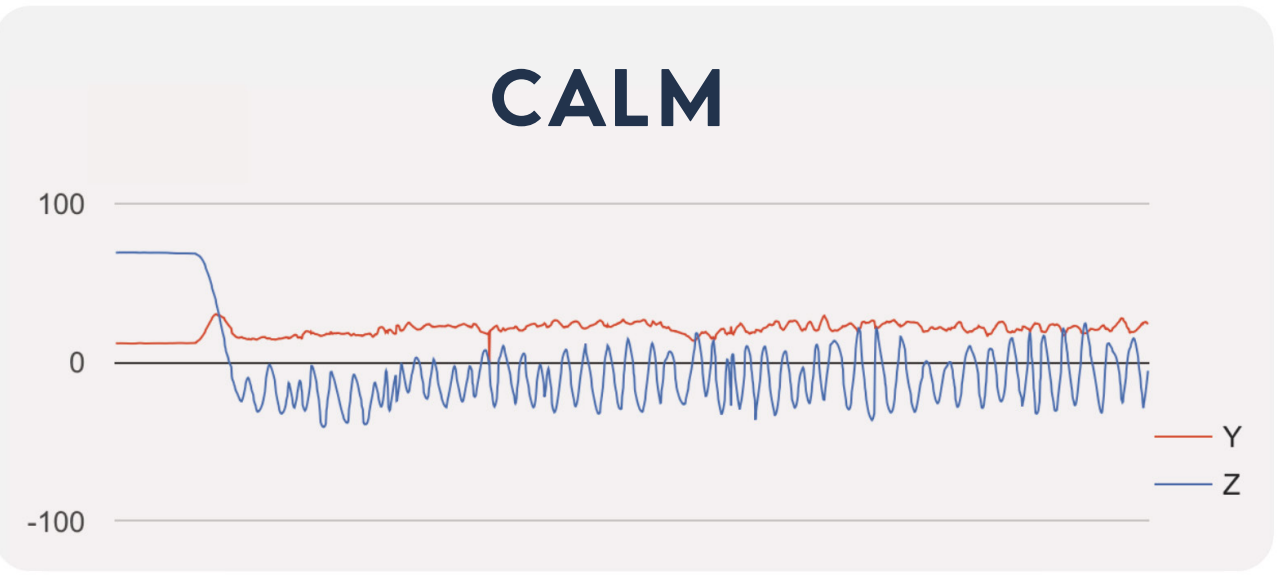
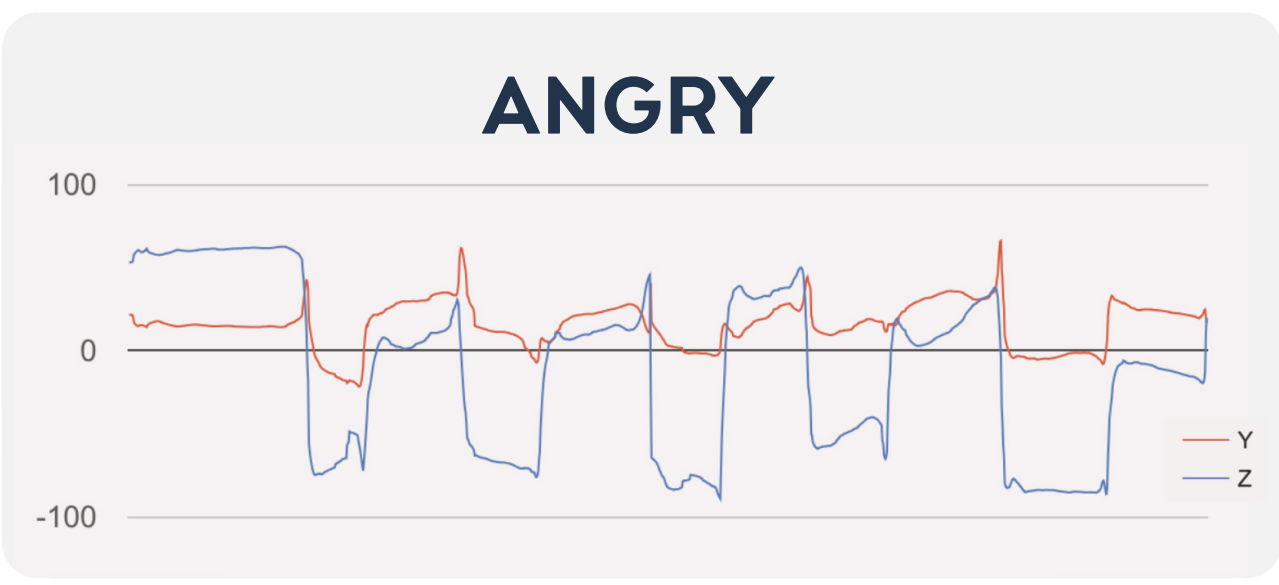
LIGHTING DESIGN

The following table shows the color and lightening effects planned to represent the feeling of each movement during the dancing presentation and the expected reaction of the spectator.

FEELING	COLORS	LIGHT EFFECT	EXPECTED REACTION
Happy		Constant	Lively and energetic positive emotions. [3,6]
Angry		Red constant, yellow occasionally emerging from the ground.	Arousing, enhances one's dominance and aggressiveness, dangerous situation. [3,4]
Calm		Green underneath and on top, blue. Green occasionally goes up.	Feel like walking in an uninhabited forest, a calm place to have peace. [3,6]
Nervous		Flashing	Uncomfort on the eyes, distressing. [3,6]
Lost		The white lights will turn on in each wall or separately.	Confusion since it can not predict what the next part of the room to be lighting [3,6]
Sad		Purple underneath and on top, blue. Blue occasionally goes up.	Confusion since it can not predict what the next part of the room to be lighting [3,6]

MOTION RESULTS

By an iterative process of working with the dancer so that their dance motions reflect how humans perceive them, 6 emotions through dance were narrowed down. The most important aspect is being able to generate data that is unique between the 6 emotions. Below are examples of each of the 6 emotions, with data from the X and Y gyroscope.



1. Gyro and acelerometer sensors on the hands and feet of the dancer will send data to the radio-frequency device.

3. The colors of the walls and music playing will change.

2. The radio-frequency device send this informations to the speakers and LED's at the room.

