



# **BACKGROUND**

It is easily noticeable how incorporating technology in people's daily routine is gaining popularity over the years. We have seen decent development in the field of headphones and speakers, yet technology can always be improved to meet our desires and needs. We are aiming for a new generation of headphones; headphones that understand you.

# **GOAL**

Our project, BioTune, is a device that takes feedback from your body to appropriately determine which type of music to play accordingly. The end goal is to be able to play music to the user based on an algorithm that combines bio-signals to make a judgment of the user's mode or state.

# BioTune

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# APPROACH

To implement the functionality of the project, we would use a commercial headphone and add some sensors on top of it. The sensors we intend to use are pulse sensor for heart rate, muscle tension sensor, and an accelerometer. The device will be connected to an arduino board that will collect all the data to make a judgment of what genre of music should be played. The Categorization of genres would be based on the beat/s for each song.

### **MODES AVAILABLE**

We are planning to build the BioTune step-by-step. First step would be the heart rate sensor and being able to outp

We intend to start this project by utilizing two modes: work out and relaxation. The motion sensor will be used to differentiate people who have anxiety from people doing a physical activity, for example.





# **PROGRESS**

- Parts have been ordered.
- Received the arduino and pulse sensor.
- Measured the pulse of different people.
- Tests for sensors will be made and assembled afterwards.



### **CHALLENGES**

Mood is a subjective matter that is hard to be quantifiable. Sometimes different modes would give similar Heart-Rate and other bio-signals, which makes the judgment a bit tricky.

Another problem we are facing is where to put the pulse sensor. The signal from the head area is not as strong as anticipated, which means we might need some extra signal processing or potentially finding a better sensor.

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