







# **BACKGROUND**

Technology is becoming inseparable from people's lives. As a result, there has been rapid developments in different fields of technology in order to keep up with users' needs and expectations.

BioTune comes to play an important role in the future of headphone industry. With our device, the choice of music will be based on the user's mental and the physical state gathering data from sensors. Along with a motivational "hyper" mode to encourage workouts, there is a meditational "calm" mode in hopes such music can be therapeutic [1].



# BioTune

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# **MODES AVAILABLE**

There are two main modes: "hyper" and "calm". The heart rate sensor will be used to average out the user's heartbeat to select the mode of play based on personal heart rate zone inputs [2]. When the user opts to shuffle to the next music choice, the device will recalculate its data.





### Achievements

- Sensors have been successfully connected to the Arduino board.
- Developed a code to get the average value of pulses to determine music played
- Wrote the code for linking the gyroscope and pulse sensor in order to determine the mode.

# CHALLENGES

Mood is a subjective matter that is hard to be quantifiable. For example, a fast heart rate can imply heavy workout or anxiety issues, which makes the calculation 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.

Those are not the only challenges. When we hooked up the accelerometer, it seemed like the Arduino lacked sufficient resources to handle all the data, and now we are looking for the simplest solution.

1 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3573365/ 2 https://www.hopkinsmedicine.org/health/healthy\_heart/stay\_ healthy/understanding-your-target-heart-rate



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