CSE 323 Project

**TOPIC:** Making Music Using Pulse Sensor Data (Biodata Sonification using blood flow)

**Uses:**

* Allows people with visual impairment to explore and understand data
* Allows you to hear trends, shifts, and patterns in data much more quickly compared to static visualizations
* Allows for a creative way to make music, fueling creativity

**CEP (Condition: Knowledge Profile)**

* **K5: Engineering design**
  + **Using sensors:** Understanding how to use and interpret data from a pulse sensor.
  + **Mapping and control design:** Knowledge of mapping data (heart rate) to various musical frequencies.
* **K8: Research literature**
  + **Research-Based Knowledge (Limited):** Research on biofeedback technology, pulse sensors, and potentially MIDI protocols to understand them.

**CEP (Condition: Problem)**

* **P1: Depth of knowledge required**
  + Requires in-depth knowledge of biomedical engineering (K3), signal processing (K5), and sound engineering (K8) and Music theory.
* **P2: Range of conflicting requirements**
  + Balancing accurate pulse data interpretation with aesthetically pleasing music generation.

**CEP (Condition: Attribute)**

**A1: Range of resources:** This project requires-

Hardware Components:

* *A pulse sensor*
* Collects blood flow data in real-time.
* *Microcontroller* - Arduino UNO
* Interfaces with the pulse sensor and processes data.

Software for data processing:

* Arduino IDE
* Hairless MIDI
* Loop MIDI