**Arduino code libraries:**

Arduino.h

DFRobot\_Heartrate.h

Wire.h

LiquidCrystal\_I2C.h

**Machine Learning Packages**:

!pip install -U scikit-learn

!pip install seaborn==0.11.0

!pip install -q ptitprince

**Machine Learning Libraries:**

1. Pandas (pd) - For data manipulation and analysis.

2. NumPy (np) - For numerical computations and data handling.

3. Seaborn (sns) - For data visualization and analysis.

4. Matplotlib (plt) - For plotting graphs and visualizations.

5. Scipy (stats) - For statistical analysis.

6. Scikit-Learn (sklearn):

- train\_test\_split - For splitting data into training and testing sets.

- PCA - For Principal Component Analysis (dimensionality reduction).

- LogisticRegression - For building and evaluating different machine learning models.

- brier\_score\_loss, confusion\_matrix - For model evaluation metrics.

**Required Libraries for interfacing with the system and Aurdiuno**:

1. serial: Part of the `pyserial` package, it facilitates serial communication between Python and hardware devices like microcontrollers (e.g., ESP8266).

2. time: A built-in Python library used for time-related functions like delays or timestamps.

3. serial.tools.list\_ports: A module from `pyserial` used to identify available serial ports.

These are essential for communication between the ESP8266 and your system, especially for sending or receiving sensor data.