**Data Analysis**

● Comparative Analysis: Use statistical methods and machine learning algorithms to compare HRV metrics between healthy subjects and heart failure patients.

● Pattern Recognition: Identify patterns in HRV metrics that could indicate early signs of heart failure exacerbation or improvement.

● Correlation Analysis: Examine the relationship between physical activity levels and physiological parameter changes to gauge the impact of daily activities on heart health.

**Things to take note of while analyzing**

● Make one plot per activity for the number of participants using sub-plots. For example we have 2 participants, then for activity 1, you will have 2 subplots in one plot figure (one for participant 1 and other for participant 2)

● Each plot should have titles, x-label and y-label (example of a title would be, "GSR Reading for Jumping". Make sure you name the activity and not just number. Also add legends.

● All activities were recorded in a single csv file. you can still plot per activity by extracting the rows for the sample numbers based on your total time duration of the file, and sampling rate (example if total time = 1 minute1= 1\*60 seconds, and sampling rate is 128, then would have a total of 1\* 128\* 60 samples). You can also use your manual time log to cross verify.

● You do not have to compare the processing algorithms (for example filtered vs unfiltered), instead consider for all plots either of the one (all filtered or all unfiltered if you did not use processing)

● Compare data collected from healthy individuals with data pulled online for heart disease patients

● Bring in meaningful statistical insights to your activities for comparison, example the average or standard deviation

● If you are planning to do ML algorithm, consider simple classifications because you have small data (example, number of push ups done in the given data)

● Your plots should relate to what the objective of your project for the healthcare problem you have considered

● Finally do not forget to analyze the product, in this case "Shimmers" for the different product features such as security, privacy, data collection, communication and accuracy

**Result Interpretation**

● Visualize Data: Use Python programming to visualize the data, making it easier to interpret changes and trends.

● Identify Key Findings: Highlight significant differences in HRV measures between healthy individuals and heart failure patients across different activities.

● Assess System Performance: Evaluate the accuracy and reliability of the monitoring system based on the data collected and analyzed.

**Reporting and Recommendations**

● Prepare a Comprehensive Report: The report can be maximum 7 pages long plus extra pages for references and appendix, font size 12, single spacing, the report should include (but not limited) the following:

1. Project Objective

2. Motivation

3. Experiment performed

4. Data collected, Data validation (if any)

5. Data analysis, visualization, algorithm results

6. Analysis of the product

■ Strengths

■ Weakness

7. Discussion

8. Conclusion

● All python code files (should be attached)

Prepare a presentation slide: The slides should include (but not limited to the following slides):

● Title

● Overview,

● Motivation,

● Experiment performed,

● Data collected,

● Data validation (if any),

● Data analysis, visualization,

● algorithm results,

● analysis of the shimmers device based on the five topics provided in your project description repeated here for ease

(communication protocol, data collection, security, privacy, sensor accuracy) ,

● Strengths and Weakness,

● Conclusion,

● References.

● Make Recommendations: Based on your findings, recommend how remote monitoring systems can be optimized for early detection of heart failure exacerbations and personalized treatment plans.

**Conclusion and Next Steps**

● Draw Conclusions: Summarize the project's impact on understanding HRV measures across different populations and activities.

● Future Research Directions: Suggest areas for future research or potential improvements to remote monitoring technologies based on your findings.