Department of Electronic and Telecommunication Engineering
University of Moratuwa
Sri Lanka

BM4152 BIOSIGNAL PROCESSING
PROJECT GUIDELINES

July 2025

For this project, you will work in groups of 2 or 3 students. The goal is to understand and implement a journal paper that is relevant to biosignal processing. Suggesting your own improvements and novelty to the paper is highly encouraged and may earn bonus marks. The last 4-5 weeks of the semester will involve student presentations and discussions of the selected papers and implementations.

1. Selection of a paper/dataset

   (a) You may use any of the following methods to select your paper/dataset

      i. Select a paper that uses a publicly available dataset so that you can replicate their results. Send an email to me to request if the paper is suitable.

      ii. Select a paper without public data. In this case, you need to apply the techniques given in the paper to another publicly available dataset. Send an email to me to request if the paper and dataset are suitable.

      iii. Select an online dataset and apply several techniques discussed in the class at a level comparable with a publication. Send an email to me with the dataset, a list of methods and an overall aim of the analysis to check if they are suitable.

   (b) Factors to consider when selecting a paper

      i. Is the dataset available?

      ii. Is the paper from a reputable Journal (see impact factor of Journal)? Does it have a reasonable number of citations?

      iii. Are the methods relevant to the techniques discussed in the class?

      iv. Are the methods too simple? Then you would need to show additional work of your own at the final evaluation.

      v. Is the code available online? In this case, you would need to show that you have not just duplicated the code directly but have done significant work to implement the paper.

      vi. Are the methods too complex? It may not be necessary to struggle to implement a complex algorithm.

      vii. If selecting a deep learning paper, ensure that you have the resources to train a deep model.

      viii. You may select an older paper, as long as they apply some of the methods given in the course syllabus.

2. Initial Presentation

   (a) The initial presentation should have the following content and should be 10-15 minutes in duration.
      i. Introduction and background
      ii. Dataset description
      iii. Methods description
      iv. Results description
      v. Implementation plan

   (b) Evaluation criteria. You will be evaluated on the following points.
      i. Understanding of the problem and methods.
      ii. Feasibility of the implementation plan.
      iii. Clarity of the presentation.
      iv. Answers to questions.

3. Final Presentation and Report

   (a) The final presentation should have the following content and should be 10-15 minutes in duration.
      i. Introduction and background
      ii. Quick overview/recap of methods
      iii. Implementation details
      iv. Implementation results
      v. Learnings and challenges
      vi. Conclusion and possible improvements

   (b) The final report should be less than 15 pages. Use proper formatting with contents page, references etc. The body of the report should contain the following
      i. Introduction and background
      ii. Overview of selected paper/dataset
      iii. Methods description
      iv. Implementation details (along with challenges faced)
      v. Implementation results (and comparison with results in the paper if suitable)
      vi. Conclusion and possible improvements

   (c) Evaluation criteria. For both presentation and report, you will be evaluated on the following points.
      i. Understanding of core concepts of biosignal processing.
      ii. Work done to implement the methods.
      iii. Solving challenges that arise.
      iv. Understanding of strengths and weaknesses of the method.
      v. Clarity of the presentation.
      vi. Flow and formatting of the report.