AIME 2021

Doctoral Consortium Review Form

Work Title:

Framework for ECG analysis

Author:

Francisco Bischoff, Pedro Pereira Rodrigues

Final Decision

Borderline

Strengths of the work:

Clinical application is compelling: reduce the number of ECG false alarms in the ICU setting.

Methodological innovation was stated: propose a novel method to more accurately detect life-threatening ECG changes and reduce ECG false alarms within memory, space, and CPU constraints.

They have access to the data set. They know the accuracy of the existing methods to detect false alarms (Table 2) and they will compare their new method against them.

They have clearly explained the knowledge gaps that they will address: others did not reported benchmarks, memory usage, robustness test, context invariance, and other arrhythmias. Furthermore, they are conducting a review of the state of the art.

They have envisioned the impact that this work may have on the state-of-the-art technology on false alarms reduction (see section 4.3).

Weaknesses of the work:

I did not find the Research plan and Methods section clear or useful. It does not give me a good idea of how they are planning to achieve the research goals.

May be this committee can help this student with a discussion on research plan.

Comments to the author:

You did not ask any question to the reviewer committee. Do you have any specific challenge to discuss?

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Final Decision

Reject

Strengths of the work:

• The topic is of interest for the AIME community, and it is a traditional research problem in the medical informatics community.

• Research methodology based on FAIRness and reproducibility.

Weaknesses of the work:

• The goals and the expected outcome are clear but not the research hypothesis or approach.
• It is not clear how the false alarms will be detected, so the degree of originality and innovation of the proposal cannot be appropriately assessed.
• The proposal only mentions the availability of the Physionet dataset.

Comments to the author:

This submission is clearly in the scope of the AIME conference and addresses a topic which has been researched for many years, the reduction of false alarms in intensive care units. In addition to this, the research will classify the alarms as contributing to life threatening or not. The proposal will use a Physionet dataset for the development of the methods. The availability of real data for testing is not ensured and the proposal does not mention other datasets that could be used for the evaluation of the methods developed. The proposal describes the data and how it will be initially processed, but the method used for the analysis and classification of the alarms is not clearly explained. The work will adhere to FAIR principles and reproducibility, but there is no information about which specific datasets would be FAIRified. The objectives and the results include to optimize resources such as memory, CPU and so on, but the proposal for achieving this is not described. In general, the objectives and the outcomes are of interest, but the methodological part lacks relevant information. A clear formulation the research hypothesis would help. Obviously, a fully detailed proposal is not expected in this doctoral symposium, and details about concrete R packages that will be used.