There are mainly **four kinds of changes** that should be done to improve the program.

The first one refers to **fixing the bugs**. The list with the bugs can be found in the manual and in the manuscript’s appendix. None of the reported bugs are critical for the program’s performance, but they highly make the usability worse.

The second kind of improvements refers to **improving some functionalities from a technical point of view**.

* One possible change is using better algorithms to detect noise and outliers, which is considered in the manuscript as a potential improvement (especially a nice improvement would be to have the option of using a deep learning algorithm that can be used in noisy signals).
* Noise detection can also be tested with other methods, like computing PSD or other frequency metrics and considering the segments of high variance as noisy. Ideally, there would be some options to choose from and a recommendation for the user to choose one depending on the signal quality.
* Another improvement that can be nice is the option to perform beat detection in just a specific segment of the signal. This is useful for example when there is a specific segment in the signal with low quality.
* Also, we realised that sometimes the beat detected as an outlier is the one before or the one after the actual outlier. This happens because the detection is good but not accurate. Having a smarter correction that identifies if the actual outlier is the chosen one or the one before/after would save some time of user confirmation.

The third possible area of improvement is including **more analysis options in the program**.

* This involves more functionalities and even allowing more data file type imports.
* Also, in the last version of the code some sports and well-being metrics were included but not completed. Completing the functionalities to analyse Heart Rate Recovery, VO2 consumption and Vt, among other metrics, could be useful for analysis done in sports and well-being.
* Other possible functionalities that can be added are cardiac illness detection, the option to import and analyse respiratory data and the option to do a waveform analysis of the ECG.

Lastly, the **usability** of the program still has much potential for improvement.

* As in any computer program, the time and memory efficiency can be improved. For this program they were assessed and they were tried to be minimized as much as possible. But this was not really considered a priority, so still much can be done to improve this.
* Mac users will also realise of the problems this program has when running on this platform. These are mainly visual problems and nothing critical, but they should be fixed to ensure a proper design. Some of the problems are the format of the info buttons and the size of the text and figures that appear on the screen, which are wither bigger or smaller than they should be. Also, the loading box that tells the user that a computational process is being done is not shown. And the option to open a new file does not work.
* The program currently just has few shortcuts used mainly for annotation. But some other shortcuts can be added, for example for the options of undo-redo.
* A potential improvement that can be added is having the same mark for the outliers whether they have been detected with the algorithm or with the threshold-based method. Now both methods can be used at the same time, but just one type can be seen at the same time on the screen, which can lead to confusion. A better way of doing this would be to just have in the dropdown on top 2 options: see outliers or see noise (now there are 3: noise, algorithm outliers and threshold outliers).
* Lastly, the interface does not like as nice as it could be. There are many visual improvements that can be done. Some ideas are:
  + More fancy buttons.
  + Outliers in the graph with a more visible mark.
  + Making the signal more visible colour than the grid or the grid more invisible.
  + Remove the scrolling from the left options by concatenating more the existing components.
  + Make the icons to expand or compress the screen more self-explanatory.
  + Being able to create a sample or noise just by clicking the mouse button and hovering it to the end of the fragment we want to choose.
  + Enable dark mode for plots.
  + Do something more convenient than the dropdown to choose noise and outlier threshold.