

Alba's team roadmap, where does she want to head...

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During an unofficial phase of the Challenge, we are working with the PhysioNet Cardiovascular Signal Toolbox.

We expand the MatLab baseline classifier:

-We add a binary SVM classification for AF detection. We used parameters calculated based on RR intervals (AF features function from the Toolbox). A large portion of false-positive classification for PVC, PAC, and the normal class was observed.

-PVCdetection function from the Toolbox was used to detect PVC beats. When the rate of detected PVC to normal beats exceeds the assumed threshold, the recording was classified as PVC.

- We have set the PR, QS, and QR ECG periods (based on points detected by wavedet\_3D\_ECG kit function). PR was used to identify I-AVB class, QS and QR to improve RBBB and LBBB classification.

-We determined the ECG isoline and signal values in J point (for every lead). Based on the difference between values we classified recording to STE and STD classes.

The third submission of our team (Alba\_W.O.) includes all described features and rules designed based on the textbook. The geometric mean scores of third entry are 0.328.

In the fourth submission, we modify our approach, we use machine learning classifier. We train a feedforward network with two hidden layers. We used all previously mentioned features. Scores of 4th Alba\_W.O entry are: F\_2=0.612, G\_2=0.379 and geometric mean=0.482.

During the official phase of the challenge, we want to include additional features that will allow better discrimination of classes (especially PAC and STE classes). We also want to perform PCA, to exclude unnecessary features. We want to extend the classification structure. Those, we are considering the application of three separate classifiers: based on heart rhythm distortion, QRS morphology and ECG periods lengths. Then we intend to merge them by a fuzzy logic classifier.