Heartmate generates necessary alerts from unusual cardiac events.

- Denoising to discard noisy/corrupted signals.
- Cardiac arrhythmia using PPG and Cardiac abnormality using PCG.
- Low or no manual intervention.
- Mono-signal based morphological trend analysis considering individual cardiac characteristics.

**ABNORMALITY DETECTION FROM PCG SIGNAL**
- Supervised learning on balanced normal abnormal class.
- Feature Selection: We first select total 54 features from temporal, spectral and wavelet domains.
- Training: Support Vector Machine (SVM) classifier with non-linear radial basis function kernel.
- Abnormality detection on the clean physiological signal.

**ABNORMALITY DETECTION FROM PPG SIGNAL**
- Detects primarily cardiac arrhythmias like extreme bradycardia, extreme tachycardia.
- It is a three step process and follows our earlier proposed Heart-Trend algorithm [3].
  - Used Heart rate variability-based feature.
  - Closeness Prediction through k-Means.
  - Classification: k-nearest neighbor (kNN) method for three class classification: \textit{normal, bradycardia and tachycardia}.
- The denoising and abnormality detection methods for ABP are same as followed in PPG.

**REFERENCES**


**TAKEAWAY**

- Corruption hampers detection of cardiac events.
- Proper denoising improves detection accuracy of cardiac events.
- Cardiac Anomaly detection with minimization of false negatives (= least number of undetected conditions)

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