Using of Commercial Interpretive Software as a Teacher's Reference Tool in Digital ECG Laboratory

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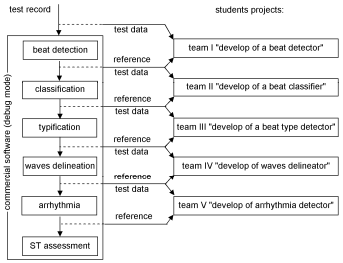
Education of numerical methods and algorithms specific for automatic interpretation of biosignals belongs to principles of biomedical engineering or applied computer sciences curricula. Besides its practical importance, this topic has serious advantages with regard to teaching aims including the pursuit for innovations and thorough procedure-based verification, both being essential in bioengineers practice. If correctly managed, the laboratory or projects in biosignal processing may become a students' favorite, despite of intrinsic complexity and required mathematical background.



Use of commercial software as a teacher's reference tool

The electrocardiogram is particularly useful in student's laboratory. Students get used to non-invasively recording this clearly structured signal from themselves using inexpensive devices and considering the role of the vascular system raise their involvement and understanding of physiological backgrounds and necessary human or computerized interpretation principles. In our laboratory teachers are rather engineers than cardiologists and therefore they need a reliable tool providing accurate interpretation results as reference for students' projects.

Students are working in pairs in simulated software manufacturing conditions. The estimated workload is 60 hours per person (three months). Each team is expected to study, develop, implement and test a particular piece of ECG interpretative software. Each individual project is concluded by a written report, a public conference-like presentation and finally several teams compile their code together to yield a complete independent application. The commercial interpretive software is provided in debug mode allowing for disclosure of intermediate results of a given ECG record after each interpretation step: beat detection, classification, typification, waves' delineation, HRV and arrhythmia analysis, ST and QT segment assessment etc. These results are used by the teacher as references for corresponding students-developed procedures and by students as input for subsequent procedure projects.

This organization put into practice since three years helps with simultaneity of development works and with unbiased quantitative validation of students outcomes based on both: custom- and database-originating ECGs.