Improving the Quality of ECGs Collected using Mobile Phones: The PhysioNet / Computing in Cardiology Challenge 2011

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The aim of the PhysioNet/Computing in Cardiology Challenge 2011 is to develop an efficient algorithm able to run in near real-time within a mobile phone, that can provide useful feedback to a layperson in the process of acquiring a diagnostically useful ECG recording. At a minimum, the software should be able to indicate within a few seconds, while the patient is still present, if the ECG is of adequate quality for interpretation, or if another recording should be made. PhysioNet has provided a large set of 12-lead ECGs for use in the Challenge, together with an open-source sample application that can run on an Android phone, and can classify ECGs as acceptable or unacceptable.

The Challenge entails three events. In event 1, participants must develop software that can classify each of 500 ECGs with respect to quality; preliminary results suggest that this can be accomplished with 80-85% accuracy using a variety of methods (including the sample application, which achieved a preliminary result of 80.7% accuracy). In event 2, participants submit a software module to be used in the sample application, and PhysioNet tests it on a reference Android phone using the same data set and scoring method as in event 1. Event 3 is similar to event 2, but is conducted using a set of ECGs not available for study by the participants, and scoring is based on both accuracy and speed. Events 2 and 3 begin in May, and all three events conclude in August.