ECG SQI Validation

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I. OBJECTIVE

1) To qualitatively validate signal quality index (SQI) for 40 MIMIC IIl ECG data.
2) To propose the programme for the upcoming Machine Learning for Healthcare Conference

II. COMPLETED TASKS

A. Validation on SQI

In ProgReport6, two sets of QRS annotations from two QRS detectors (Joachim Behar's *qrs_detect2.m* and Qinghua Zhang's *rpeak.m*) have been used as the input to the *Bbx_compare.m* function. The output for *Bbx_compare.m* is the SQI with the range of 0–1. In this report, 10 sec window SQI which move every 1 sec has been added to the code (thank you to Marco for the guidance). The qualitative validation has been carried for 40 MIMIC II (random) 7-min samples. Two different signal quality as the result of the validation process is shown in Fig.1 and Fig.2 .
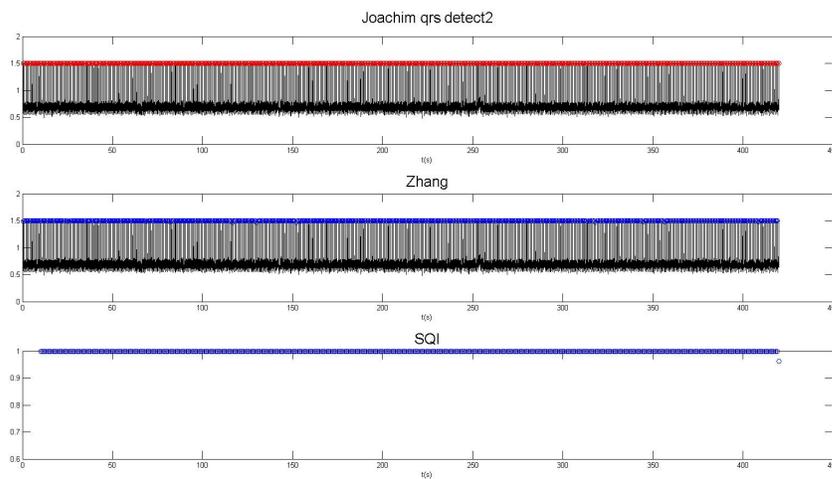
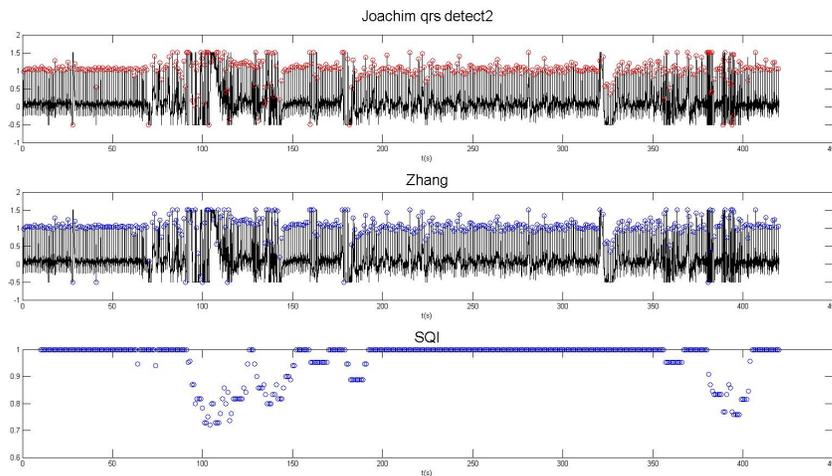

Fig. 1. All 10 s window SQI shows more than 0.9.

Fig. 2. Some 10 s window SQI are below 0.8.

B. Proposed programme for the Machine Learning in Healthcare Conference

The proposed programme for the Machine Learning in Healthcare Conference are as in TableII-B. Currently we have 11 speakers to present his or her current research interest. Therefore, the proposed time for each speaker is 35 mins.

Time	Programme	Duration
08:30 - 09:30	Registration welcoming drinks	60 mins
09:30 - 10:00	Opening - Prof. Peter Donnelly (University of Oxford)	60 mins
10:00 - 10:35	Dr. Shamim Nemati (MIT, USA)	35 mins
10:35 - 11:10	Prof. Niels Peek (University of Manchester)	35 mins
11:10 - 11:20	Coffee break	10 mins
11:20 - 11:55	Prof. Christopher Williams (University of Edinburgh)	35 mins
11:55 - 12:30	Prof. Chris Holmes (University of Oxford)	35 mins
12:30 - 13:20	Lunch	50 mins
13:20 - 13:55	Dr. James Hensman (University of Sheffield)	35 mins
13:55 - 14:30	Prof. Bart Vanrumste (KU Leuven, Belgium)	35 mins
14:30 - 15:05	Prof. Maarten de Vos (University of Oxford)	35 mins
15:05 - 15:15	Coffee break	10 mins
15:15 - 15:50	Prof. Richard Dobson (King's College)	35 mins
15:50 - 16:25	Prof. Suchi Saria (Johns Hopkins University) - Skype	35 mins
16:25 - 17:00	Dr. David Clifton (University of Oxford)	35 mins
17:00 - 19:00	Networking	120 mins
19:00 - 20:30	Dinner	90 mins

III. Conclusion

The qualitative validation procedure of the proposed method to determine SQI for ECG data using .mat data format has been carried out.

IV. Previous reports

All the progress reports are stored in http://goo.gl/5yASrs

- 20 Feb 2015 - Datasets for respiratory estimation
- 06 Mar 2015 - Format of the Datasets for Respiratory Rate Estimation
- 20 Mar 2015 - Dialysis 1, 2 and 3 data sets
- 01 Apr 2015 - Completion of Dialysis 1 and 2
- 17 Apr 2015 - Data Screening
- 01 May 2015 - ECG QRS Detection and SQI
- 13 May 1015 - ECG SQI Validation