

# Dialysis 1, 2 and 3 data sets

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## I. OBJECTIVE

The main objective is to store all available data sets into our OURR folder using the same data structure or format as was used in 'Oxford Respiratory Rate Toolbox'.

## II. COMPLETED TASKS

### A. Data sets

The information on the data sets have been updated as shown in Table I in Appendix A. Currently I am working (extracting the raw data, format and upload) on 10 data sets which are MIMICII, CapnoBase, Fantasia, Dialysis 1 (HM), Dialysis 2 (OB), Dialysis 3 (DF), CALMS2, PICRAM, Listen and Vortal. MIMICII, CapnoBase and Fantasia data sets have been successfully formatted and uploaded into OURR 'bspprojects9' shared folder. The focus for the past 2 weeks are on the Dialysis datasets. I have got the permission to access Dialysis 1 (D1) and Dialysis 2 (D2) which are in 'dialysis' folder, and Dialysis 3 (D3) which is in 'Dialysis\_bsp1'. All three dialysis data sets are located in 'bspprojects7' shared folder. On the 12 Mar 2015, I had a short meeting with Ms. Clare on Dialysis data sets. D1 is the patients data 3~4 hr after on dialysis session. It is measured at patients home for 24 hrs. D2 and D3 data are taken during the dialysis where the recording time is 4 hrs. D1 and D2 were using Hidalgo for ECG and PPG as the acquisition unit while D3 was using Black Shadow. From the belt (RR) data, Black Shadow shows a better result. A Matlab script to extract and format D3 dataset has been developed. Formatted D3 data set has been uploaded to OURR shared folder. By the time this report is written, data formatting for D2 still running. Due to some looping processes and lack of experience in Matlab programming, the 'out of memory message' has appeared. For this script, an error appeared on the 'belt' data (assignment of cell), for D2, only ECG and PPG will be formatted and uploaded to OURR share folder. I will review the script again next Monday. As for D1, a process of extracting PPG will be carried out before included together with ECG and 'belt' (reference RR) data. In future, a more robust script and less time taken need to be developed.

### B. Attending course in IT Services

I have attended several courses organized by the IT services.

- 1) 25/2, 4/3, 11/3, 18/3 (total 12 hrs) – Introduction to Matlab (Erasmia Lyka)
- 2) 6/3, 13/3 (total 6 hrs) – Latex (Susan Hutchinson)
- 3) 19/3 (8 hours) – Statistics Concepts for Researchers (John Fresen)

## III. 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

APPENDIX A  
DATASET INFORMATION

TABLE I

Name	MIMICH 2012	CapnoBase 2015	Fantasia 2015	Dialysis 1 2011	Dialysis 2 2012	Dialysis 3 2014	CALMS2 2014	PICRAM 2015	Listen 2014	Vortal 2014
Updated	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Publicly Available	✓	✓	✓	✓	✓(ECG PPG only)	✓	✓	✓	✓	✓
Formatted/ ↑ bsprojects9	✓	✓	✓	✓	bsprojects7	bsprojects7	bsprojects5	bsprojects12	✓	✓
Raw data	physionet1_temp	URL	URL	bsprojects7	bsprojects7	bsprojects7	✓(very few)	ICU X, ward ✓	✓	✓
ECG Signal	✓	✓	✓	✓	✓	✓	✓	ICU X, ward ✓	✓	✓
PPG Signal	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Accelerometry Signal	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Subject Population	patient	patient	healthy	patient	patient	patient	post-surgery <sup>a</sup>	adult	post-cardiac surg	healthy(young/elderly)
Clinical Setting	ICU	post-surg	✓	3-4h post Dialysis	on Dialysis	on Dialysis	post-op ward	ICU, ward	ICU, ward	laboratory
Breathing (s/v) <sup>b</sup>	s, v	s, v	s	s	s	s	s	ICU s, v / ward s, v <sup>c</sup>	s, v	s, v
No. of records	1017 <sup>d</sup>	42	40	105	622	374	~ 250	ICU > 9000, ward 441	196	42 young, 14 elderly
Neonates (<1 y.o.)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Paediatrics (1-18)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Young Adult (19-40)	✓	✓	✓	✓	✓	✓	✓(very few)	✓	✓	✓
Adult	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Elderly (>70 y.o.)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unwell?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Chronically Unwell?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Acutely Unwell?	✓	✓	✓	✓	✓	✓(a few)	✓	✓	✓	✓
Ambulatory?	✓	✓	✓	✓	✓	✓	✓	ward ✓	✓, X	✓, X
Recording Time	~8 min	8 min	~2:00 h	24 h	4h	4h	1:30 h	ward 1-2 d	2d ICU, 5d ward	✓, X
ECG/PPG Acq. Equip.	IP	PPG <sup>f</sup>	PPG <sup>f</sup> , ECG <sup>h</sup>	Hidalgo belt	Hidalgo belt	Black Shadow belt	IP	i	ICU <sup>j</sup> , ward <sup>k</sup>	i
Continuous RR Signal	✓	pCO <sub>2</sub> <sup>m</sup>	IP	✓	✓	✓	✓	✓	ICU - IP, ward X	IP
Other Reference RR	✓	annotation	✓	✓	✓	✓	✓	nurse	ICU <sup>m</sup> , ward (nurse)	X
Availability	✓	✓	✓	✓	✓	✓	✓	approx. needed	> 6 months	> 3 months

<sup>a</sup> gastro-intestinal

<sup>b</sup> spontaneous/ ventilated

<sup>c</sup> non-invasive

<sup>d</sup> the extraction from matched subset of 4492 records

<sup>e</sup> young: 10 mins at rest (supine), (2 mins walking approx 5 mins running)- 10 mins at rest (supine) after exercise, elderly: 10 mins at rest (no exercise)

<sup>f</sup> Datex Ohmeda (100 Hz)

<sup>g</sup> Nonin (75 hz)

<sup>h</sup> Hidalgo (256 Hz)

<sup>i</sup> PPG: Nonin 4100 Bluetooth Enabled

<sup>j</sup> Philips bedside monitor (PPG 125 Hz, ECG 125 Hz)

<sup>k</sup> Philips telemetry (PPG, ECG)

<sup>l</sup> Philips bedside monitor (ECG 125 Hz, PPG 125 Hz), Nonin wearable sensor (PPG 75 Hz)

<sup>m</sup> capnometry waveform (25 Hz), airflow

<sup>n</sup> ventilator or manual