Lab # 1

Data Exporting via Physionet

Raed Suftah

110-44-889

1. Export data with .mat file

i. Use WFDB Linux ToolKit

For example, to convert record **mitdb/200**, use this command:

wfdb2mat -r mitdb/200

This works even if the input files have not been downloaded; in this case, **wfdb2mat** reads them directly from the PhysioNet server.

The above procedure is to make sure that your WFDB has been installed correct and working to read any file.

Result:

```
liveuser@localhost:/home/liveuser/Downloads/wfdb-10.5.14

File  Edit  View  Search  Terminal  Help
cd /usr/share/man/man1; ln -sf a2m.1 md2a.1
cd /usr/share/man/man1; ln -sf ann2rr.1 rr2ann.1
cd /usr/share/man/man1; ln -sf edf2mit.1 mit2edf.1
cd /usr/share/man/man1; ln -sf hrfft.1 hrlomb.1
cd /usr/share/man/man1; ln -sf hrfft.1 hrmem.1
cd /usr/share/man/man1; ln -sf hrfft.1 hrplot.1
cd /usr/share/man/man1; ln -sf plot2d.1 plot3d.1
cd /usr/share/man/man1; ln -sf pnnlist.1 pNNx.1
cd /usr/share/man/man1; ln -sf setwfdb.1 cshsetwfdb.1
cd /usr/share/man/man1; ln -sf wav2mit.1 mit2wav.1
make[2]: Leaving directory `/home/liveuser/Downloads/wfdb-10.5.14/doc/wag-src'
make[1]: Leaving directory `/home/liveuser/Downloads/wfdb-10.5.14/doc'
[root@localhost wfdb-10.5.14]# wfdb2mat -r mitdb/200
Source: record mitdb/200
val has 2 rows (signals) and 650000 columns (samples/signal)
Duration:    30:05
Sampling frequency: 360 Hz  Sampling interval: 0.002777777778 sec
Row     Signal  Gain    Base    Units
1       MLII    200     1024    mV
2       V1      200     1024    mV

To convert from raw units to the physical units shown
above, subtract 'base' and divide by 'gain'.
[root@localhost wfdb-10.5.14]# █
```
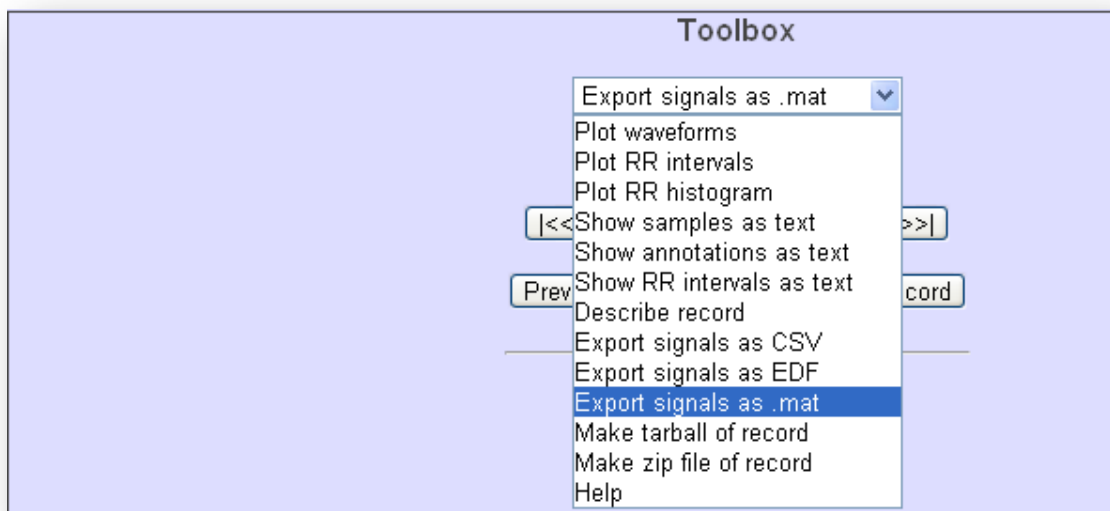
* The above screenshot is for the program installation.

ii. Use The PhysioBank ATM Toolbox
    Go to link http://physionet.org/cgi-bin/atm/ATM

In the input, choose the signals that you want.
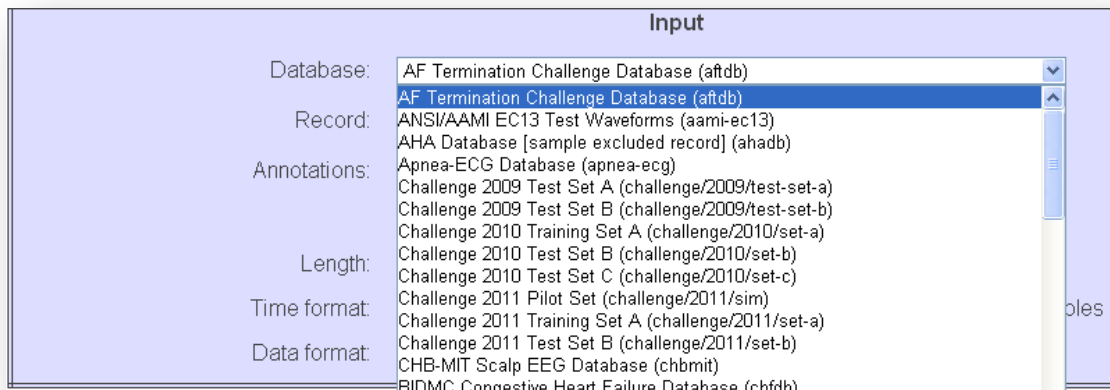
In toolbox panel, choose ***Export signals as .mat***

Then this toolbox would covert files for you automatically. Save all the files that converted for you in a folder.

2. Run and plot the bio-signal in MATLAB

The MATLAB zip file is given which can run both two different data types.

The rddata.m and plotATM.m files are modified so that users can control input data.

i.   First, choose the type of data that you want to input. 1 is *.dat*; 2 is *.mat*

ii. Then run the code to get the plot of signals and the outputs of data.

Result:

3. Appendix:

* This is the code used in the procedure.

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

% This program reads ECG data from both .data
% files and .mat files

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

clc; clear all; close all;

dataType = input('Please choose the type of data: 1-.dat; 2-.mat: [2]');
if isempty(dataType), dataType = 2; end

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
if dataType==1

%% ECG for 212 only

    %------ SPECIFY DATA ----------------------------------------

Path ='C:\Users\Raed  Suftah\Desktop\Biomedical\Data\MIT_BIH';  %  path,
```

3

where data are saved

```
    headerfile = '100.hea';         % header-file in text format

    atrfile = '100.atr';            % attributes-file in binary format

    datafile ='100.dat';             % data-file

    samplelength = 600;              % number of samples to be read

                                    % in case of more than one signal:

                                    % 2*samplelength samples are read

    data = rddata(path,headerfile,atrfile,datafile,samplelength);
elseif dataType==2

    %% find the data files in database index.txt in each database folder

    addpath('Data\AFTDB');

    datafile = 'n01m.mat';

    infofile = 'n01m.info';

    samplelength = 300;

    data = plotATM(datafile, infofile,samplelength);
else

    disp('Wrong dataType input!');
end
```
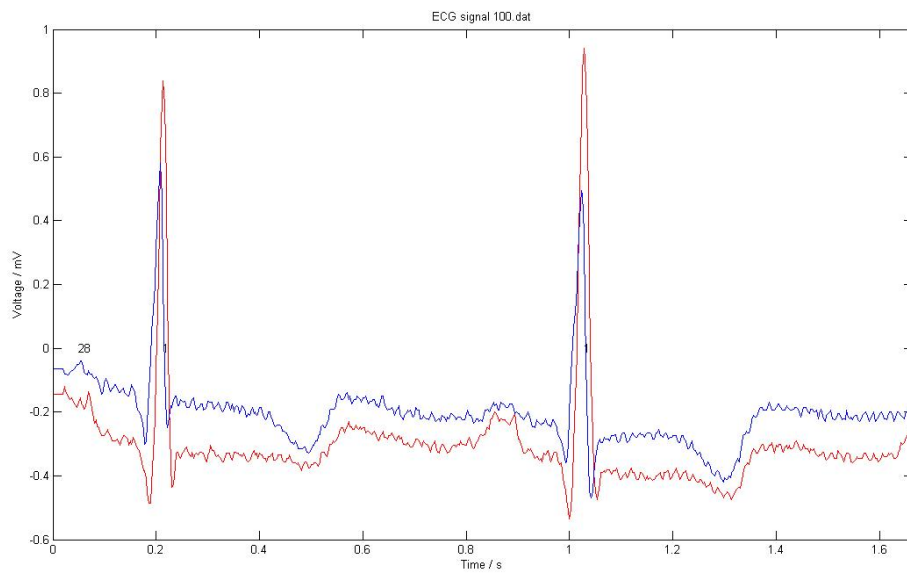
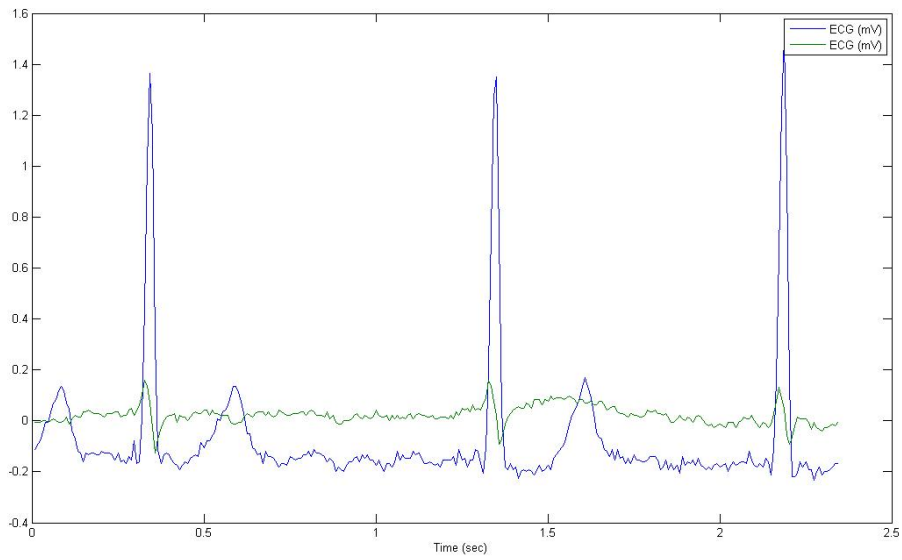Fig.1 .dat datatype plot using rddata.m. The length of signal is 600

Fig.2 .mat datatype plot using plotATM.m. The length of signal is 300