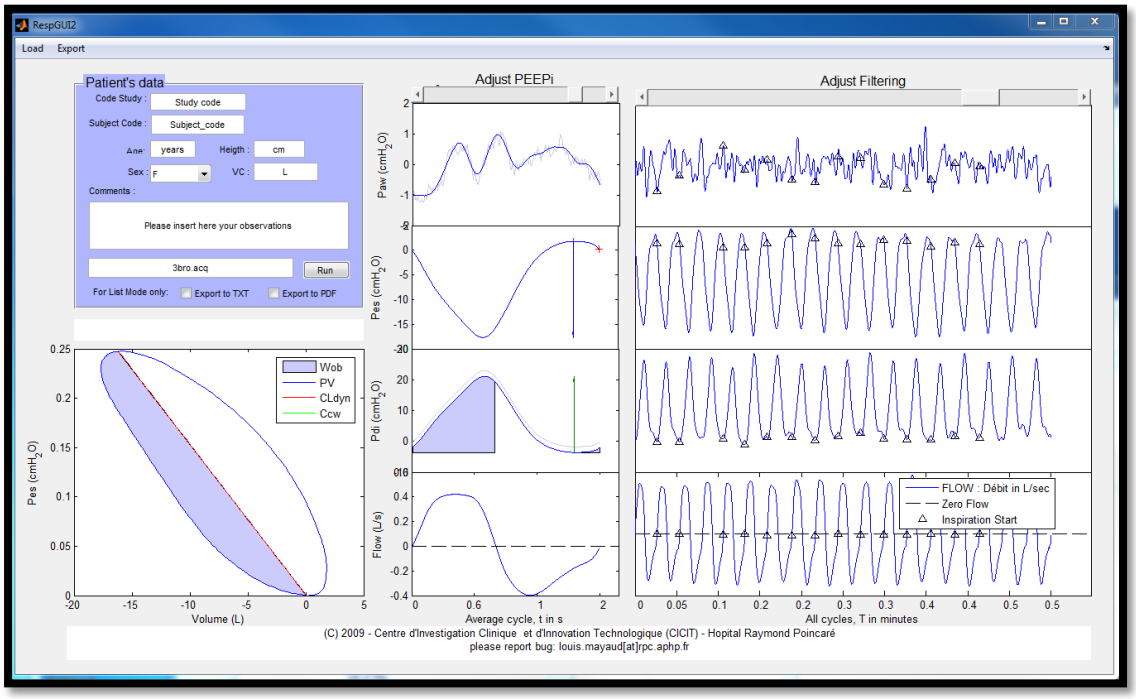
RespMAT

Software user's guide

A Matlab deployed component for automated processing of invasive respiratory signals and work of breathing estimation.

Louis MAYAUD
1/27/2012



Introduction

This document is a user guide that will help you to download, install and use the RespMAT software. RespMAT is a Matlab generated application that is deployed as a standalone application. It processes files with invasive respiratory signals (esophageal and gastric) in order to provide several parameters related to lung function (works of breathing, resistance, ...)

Setup

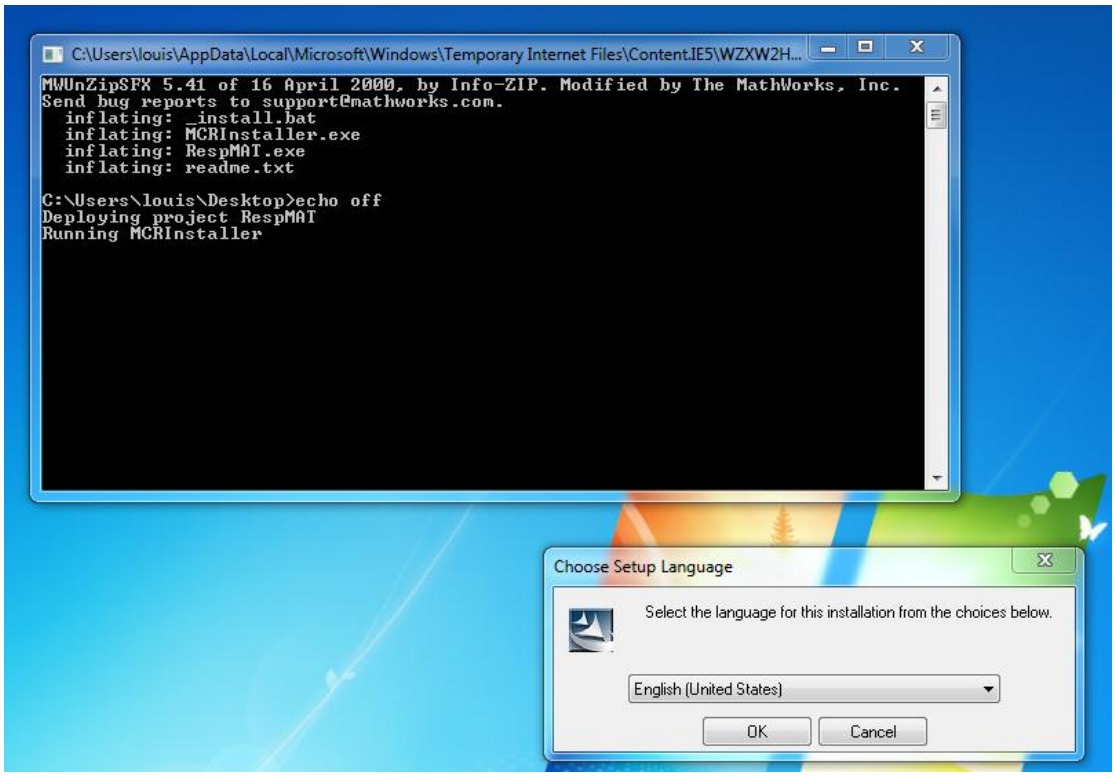
Download the software

Currently, the software is available at the following address:

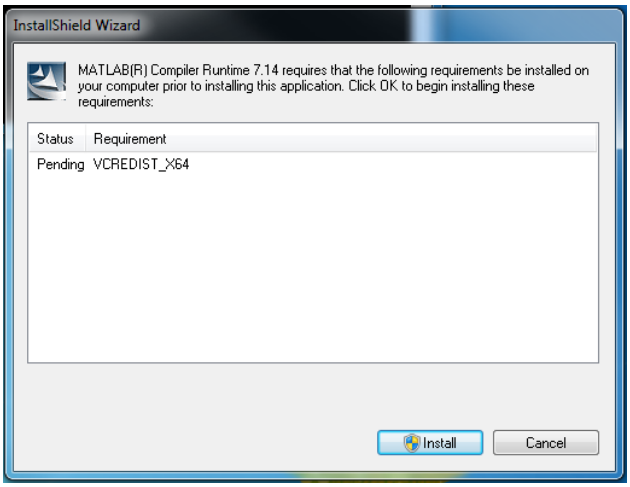
http://louismayo.free.fr/RespMAT6/RespMAT_pkg.exe

The file contains the Matlab Runtime Componant (MRC) and should take up to 30min to download if your connection is weak. Once you have downloaded the file, run it and go through installation of the MCR

Setup the Matlab MRC



1. Open the file you downloaded
2. A command window will automatically open (black window on the left)
3. A second window “Choose Setup Language” automatically open
4. Select language and press OK
5. Perhaps your system is going to complain about missing components as illustrated below:



6. Press “Install”
7. Following the installation steps.

Using RespMAT

Importing data

It can use four input file format: *acq*, xls, *csv* and *list*. The first two are for single file mode while the latter allows automated processing of a set of exams.

ACQ files

This file format comes from Acqknowledge™ recordings. The use of this type of file is kind of straight forward. It does not require any pre-processing (filtering, smoothing), you just have to make sure that your file contains enough data samples and to sort signals in the following order: Peso, Pga, Flow and Paw.

CSV files

If you have any other type of acquisition system, you might be able to export data as ASCII format. It is thus possible to import CSV files into the software where data separated by a semi-column character ';'. Columns should be sorted as follow: Flow, Peso, Paw and Pga.

Since there is no header in the CSV file, you will need to specify the sampling frequency of the record when prompted.

XLS files

It is also possible to import XLS files into the software. Make sure that the columns ar sorted from left to right as follow: Peso, Pga, Flow, Paw.

Since there is no header in the XLS file, you will need to specify the sampling frequency of the record when prompted.

LST file

If you wish to automatically process a set of files, you will have to write a LST file. The format of the LST file should be: one line per exam with the following data separated by a blank space:

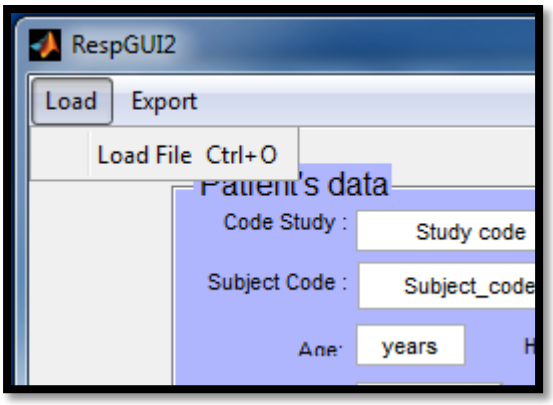
- File type (acq/csv so far)
- Name_field1
- Name_field2
- Age
- Size
- Sex
- Comments (within double quotes)

Loading your data

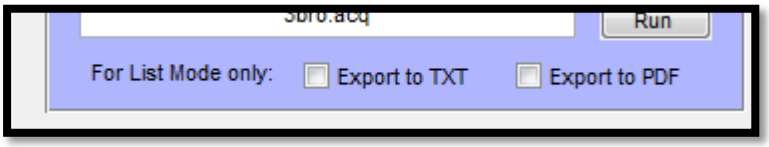
Once you have your data ready, open the RespMAT. In the upper left hand side corner of the application you will have to:

1. Fill all your patient's information in the blue frame: study_name, Subject_code, age, height and sex. The VCI field will update automatically unless you have the value from a previous exam. If you have any observation about the patient fill the appropriate box.

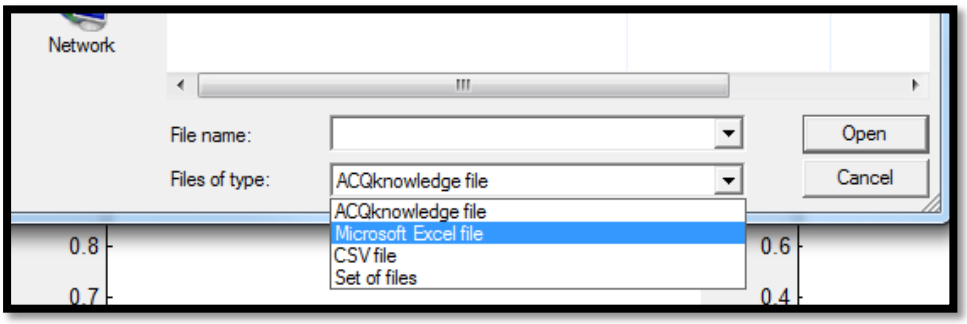
2. Select a file by clicking on load (or pressing Ctrl+O)



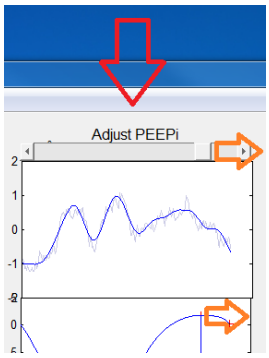
Before you click on "Load File", if you're willing to run a LST file you should tick the following boxes if you're willing to export your results:



3. A prompt window will ask you to select the file. To select the file type, click on the drop down menu

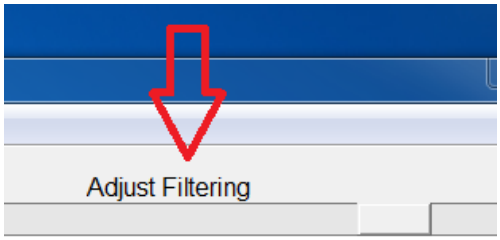


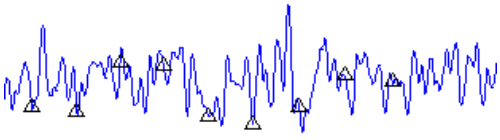
4. At this stage you should see the ploting areas populated with your data as seen on the front page of this document.



5. At this stage you can tune the iPEEP point by moving the cursor the red arrow. If you slide the cursor on the right, you will move the AutoPEEP point on the right as indicated by oranges arrows.

6. Similarly, the Filtering sliding command will allow you to tune the amount of filtering. If you slide it to the left you will see black triangles (indicating the beginning of the inspiratory effort) disappearing. It indicates a stronger filter being applied on the data. On the contrary, if you slide the filter to the right, you will see new cycle being included in the analysis.





7. Finally, once you are happy with you parameters, you can select the "export" menu in the top-left hand side of the application. It will prompt you for a file to export the results to.