Requirements

To run Oxygen Extractor the following software are necessary :

- LabVIEW 13 SP1 or higher version
- MATLAB R2010a or higher version

In case a warning pops up when opening ***Oxygen extractor*** , ignore the warning.

Data provided

2 image files and 1 ini (text) file containing the acquisition parameters are provided. These 3 files are necessary for our program to run.

How to use Oxygen extractor

1- Start by pressing the LabVIEW RUN arrow. *This will open a window prompting you to choose the file to analyse.*
2- Choose a file. *It contains acquisitions at one or several points in 2 channels displaying red (1) and green (2) photons emitted by fluorescence and phosphorescence. This will fill the upper box indicating the file path and name, the date and time when it was acquired and the number of points acquired.*
3- *The raw data corresponding to the channel and point number chosen will also appear on the screen. Use the scroll bar to look at it.*
   If you want to display another channel or point or change the look up table (LUT), change the parameter of interest in the "analysis box" and then press "the display raw data" knob twice.
4- If you want to analyse the average pO2 for the whole data loaded :
   choose the "Averaged" Tab and press the "Analyse Average" knob.
   The average Phosphorescence transient versus time, the corresponding phosphorescence decay time and pO2 are calculated and displayed.
5- If you want to analyse the pO2 with the distance (in time) to Red Blood Cells (RBCs) :
   a. Choose the "Time-lapsed" Tab
   b. You first need to detect individual RBCs. To do that select the "RBC Flow" Tab, choose the channel and the point that you want to analyse, and then press the "analyse RBCs Flow" knob.
      The program will analyse the image to identify each RBC and the result will be displayed. You may want to zoom in using LabVIEW tools.
      If you do not want to consider the whole dataset you may select specific start and stop times in the "limit analysis" box.
   c. Then you can calculate the EATs: select the "EAT" Tab, choose the channel that you want to analyse, and then press the "analyse EAT" knob. An indicator will remind you of the point you have chosen for your analysis.
      The program will compute the Tau, pO2, Number of decays versus time from the closest RBC. Explore the Tau, pO2 and Number of decays Tabs to look at the results.
   d. Last you can calculate the pO2 next to RBCs and in between RBCs. Go to the "pO2 RBC/InterRBC" Tab, choose appropriate time windows based on the EATs results and press "Analyse pO2 RBC interRBC".
      The program will compute the Tau, pO2, Number of decays during the chosen time periods.
6- Press "Exit" when you are done.