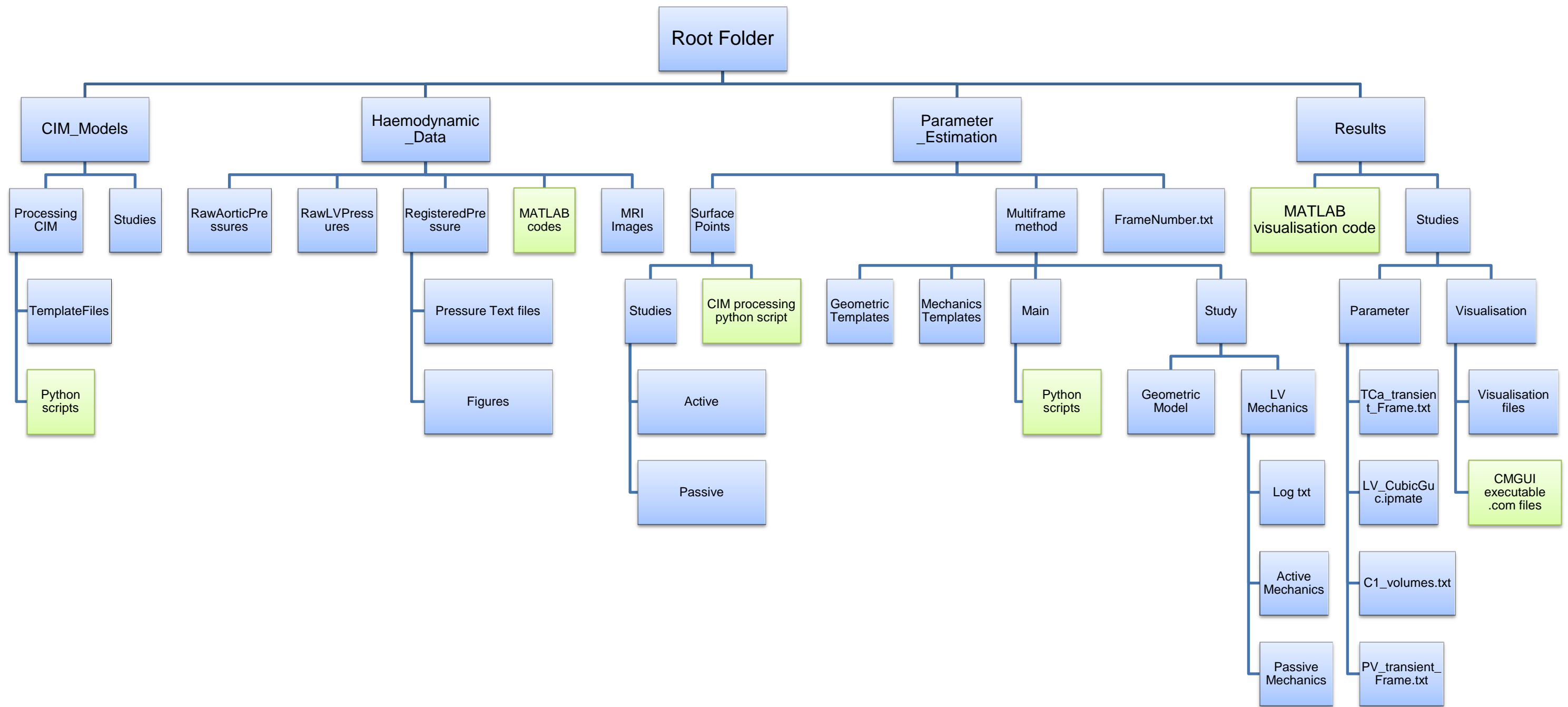


Parameter Estimation Instructions

1. File system architecture



2. Generate CIM models in .ipnode and .ipelem format

- ❖ Use python script named ProcessingCIM.py in CIM_Models folder to generate CIM models in a format which can be recognised by CM.

3. Haemodynamic Data

- ❖ Use the MATLAB code in the Haemodynamic folder to process the raw pressure information into a text file with pressures corresponding to each MRI frame.

4. Generate surface point data from CIM models

- ❖ In the Parameter_estimation folder under Surface_Points, run the python script CIMProcessing.py to generate .ipdata files which contain data points for each MRI frame.

5. Passive and Active Contractile Parameter Estimation

- ❖ Enter the important frame number and name of study in the text file NYStFran_FrameNumber.txt. The format of this file is:
 - Study_name -> DS_frame -> ED_frame -> end_IVR_frame -> tot_frames
- ❖ Run python script named MultiFrameMain2014.py in Main folder under Multiframe_method
- ❖ Note: you may wish to run the passive and active portions sequentially for better control of debugging process. In that case, comment out the corresponding command in the python script file to choose which portion to run.

6. Visualisation of results

- ❖ The main python script will copy the relevant files into the results folder after simulation is completed.
- ❖ The passive estimation process will produce C1_volume.txt in the parameter folder of the study. This file contains the MSE error of fitting followed by the volume of ventricle at each time point. It will also fill the visualisation folder with .exnode, .exelem and .exdata files for visualising optimised inflation.
- ❖ The active estimation process will produce the TCa_transient_Frame.txt file in the parameter folder of study. This file contains the LV pressure followed by the TCa parameter estimated and then by the volume of ventricle and the MSE

of fitting at each time point. It will also fill the visualisation folder with the same format of files as the passive process.

- ❖ Run the .com files for visualising passive or active optimised models. Must remember to update the study name as well as the important frame numbers in these .com scripts before running.
- ❖ Run the MATLAB script to generate a graphical representation of the parameters estimated. NB: At the moment, this section requires the manual reformatting of the C1_volume.txt file into a new PV_transient_Frame.txt file. This process just involves changing the order in which information is presented to: LV Pressure -> LV volume -> MSE of fitting.