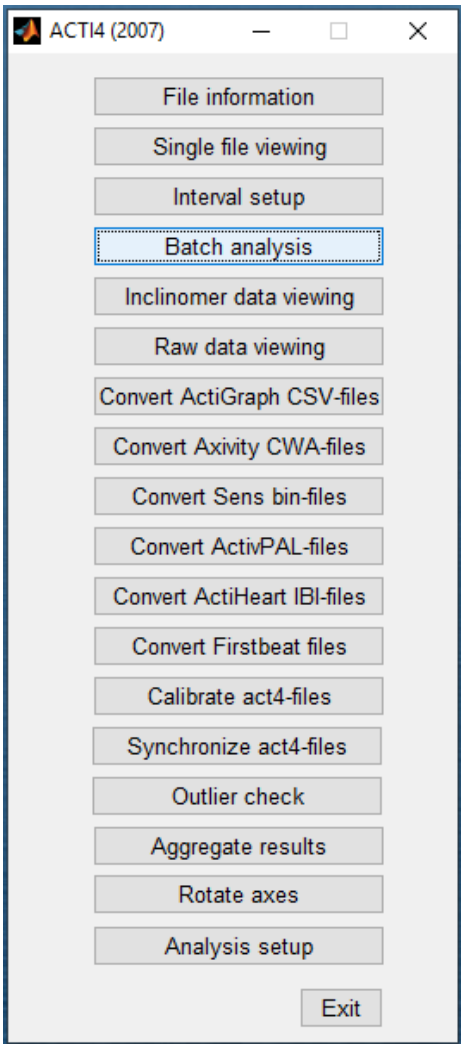
July 2020

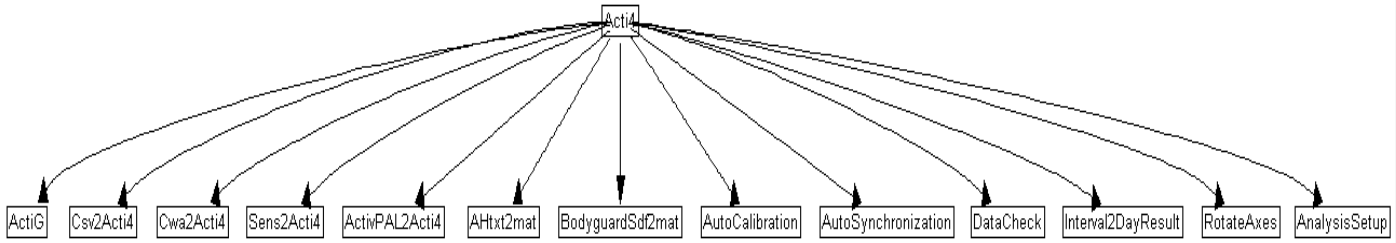
Acti4 software structure

The *Acti4* software consists of 75 Matlab m-files (program text), 13 fig-files (user menus), 1 mat-file (last user setup) and 2 mexw64-files as well as 2 Excel files.
The two mexw64-files are specially compiled C files (from OpenMovement) which are used for reading cwa-files (data from AX3 accelerometers).
The two Excel files are *AxivityNumbers.xlsx* and *ParameterList.xlsx*. *AxivityNumbers.xlsx* contains a list of current AX3 accelerometers including AX3 serial numbers (5 digits) and corresponding NFA short numbers (3 digits).
AxivityNumbers.xlsx are optional for running of Acti4.
ParameterList.xlsx includes a *List* and *Default* sheet and any specified user setups. The *List* sheet contains a list of all output parameters and their formats as found in output from a *Batch* run. The *Default* sheet contains the default setup for the analysis displayed in the Acti4 menu item *Analysis setup*. User settings specified in the *Analysis setup* (default modifications), are saved as new sheets in *ParameterList.xlsx*. If a specific user setup needs to be removed, this is done by manually deleting that sheet in *ParameterList.xlsx*. The last used setup is stored in *StartFile.mat*
Acti4 uses the Matlab toolboxes *signal, curvefit* and *stats* (and if necessary *compiler*).

The main function *Acti4* sets up the main menu with 18 menu items:



Selection of an item from the main menu results in a call to one of the functions in the below figure. The upper 6 menu items are handled by the function *ActiG*.



For a complete overview of the Acti4 functions and their dependences, se the document Acti4.html.

Some important functions:

AnalysisAndPlot: This is the central function running the calculation loop for the analysis of intervals from the setup-file (Excel file specifying the recordings to be analysed). It is called by *ActiG*.

ActivityDetect. The detection of activity modes is carried out in this function (called by *AnalysisAndPlot*).

Acti4ExternFunction: This function enables a user to specify additional calculations (if *Acti4ExternFunction.m* is found on the Matlab search path, it will be called in the calculation loop).