1. **Software needed**

The Mitral Valve (MV) toolbox has been built using MATLAB version R2019b (MATLAB®, R2019b, 9.7.0.1247435, The MathWorks Inc., Natick, MA, USA). To run the toolbox, it is recommended that the user installs *MATLAB version R2019b* or higher.

1. **Install GIBBON toolbox**

The Mitral Valve (MV) toolbox employs MATLAB functions from the GIBBON (Geometry and Image-Based Bioengineering add-On) toolbox. This is an open-source MATLAB toolbox by [Kevin M. Moerman](https://kevinmoerman.org/) and more information on it can be found on

<https://www.gibboncode.org/>.

For the MV toolbox to work, the GIBBON toolbox needs to be installed. This toolbox can be obtained from

<https://www.gibboncode.org/Installation/>,

#### where instructions for download and installation are present. No 3rd party packages are necessary to run the MV toolbox, therefore only step 2 of the installation process (running “installGibbon.m” in MATLAB) is needed. After opening MATLAB, ensure that the Current Folder Panel displays the folder in which the Gibbon has been downloaded to and extracted, and write on the MATLAB command window:

#### run installGibbon.m

This will install the GIBBON toolbox and the help and documentation will also be integrated. Afterwards, restart MATLAB.

1. **Run Mitral Valve toolbox**

The folder named “library” includes all needed functions to run the MV toolbox. Ensure that the Current Folder Panel displays the “library” folder. To get the toolbox started, run the script “MV\_generator.m” from the MATLAB command window. Simply write:

run MV\_generator.m

and this will initiate the toolbox GUI.

After running the toolbox, all exported files will be placed in the folder “Exported\_files”, within the “library” folder. If one chooses to create an input simulation file for LS-DYNA, this will appear with the name “LSDyna\_inputfile\_MV.k”; otherwise, the model is exported through a .stl file “Mitral\_valve\_model.stl” representing the leaflet surfaces and a text file “Papillary\_muscle\_coordinates.txt” including 3D coordinates for the papillary muscles.

In the “documentation” folder, a list of contents and abbreviations can be found: the first specifies all functions used within the toolbox while the second states the abbreviations employed in the GUI and toolbox images.

1. **Modifications**

The MV toolbox is to be made freely available and therefore can be modified by its users.