# Users and developers guide

Functionalities

The task is to create an app with a GUI in MATLAB to display and evaluate 3D data that is for example the result of beamforming ultrasound data or from other tomography modalities such as terahertz imaging

* Selection and loading of files containing the data and settings such as the axes and relevant parameters of the data
* Relevant parameters and settings should be shown and adjustable by the user if it is possible.
* Visualization of the 3D data as a volume. Several display options could be tested and chosen by the user, for example volume rendering or maximum intensity plotting.
* From the 3D data 2D slices should be extracted at defined positions. The position and the axes can be chosen by the user, using sliders.
* Save/Export of the images. The file location is chosen by the user.
* Axes next to volume and slices, either in mm or per wavelength.

Structure

GUI is designed in Qt Creator, version 15.00 (Enterprise):

A screenshot of a computer

AI-generated content may be incorrect.

Can be downloaded at: <https://www.qt.io/qt-educational-license#application>

In this application the interface is shown as in the following image:

A screenshot of a computer

AI-generated content may be incorrect.

On the left side of the panel are the layouts, buttons, container and more options to be used. The way to implement them is to drag them to the window.

After this in the same document we could find the .ui program:

A screen shot of a computer

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This file is the one we are gonna copy in our project to create the GUI of the app. In our case we are using Visual Studio, nevertheless can be used any source code editor, as Jupiter Notebook, Eclipse or any other.

There it will be generated the .py file for visualization, the code line is:

pyuic5 principalwindow.ui -o ui\_pw.py

Where principalwindow.ui is the name of ur .ui file imported from Qt, ui\_pw.py is the name we are giving to the python file generated. It will look as in image 4:

A screenshot of a computer

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On the main code we will import our file:

A screen shot of a computer

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The rest of the application is programed on the main.py, this one is a python file with all the applications logic.

Resource code