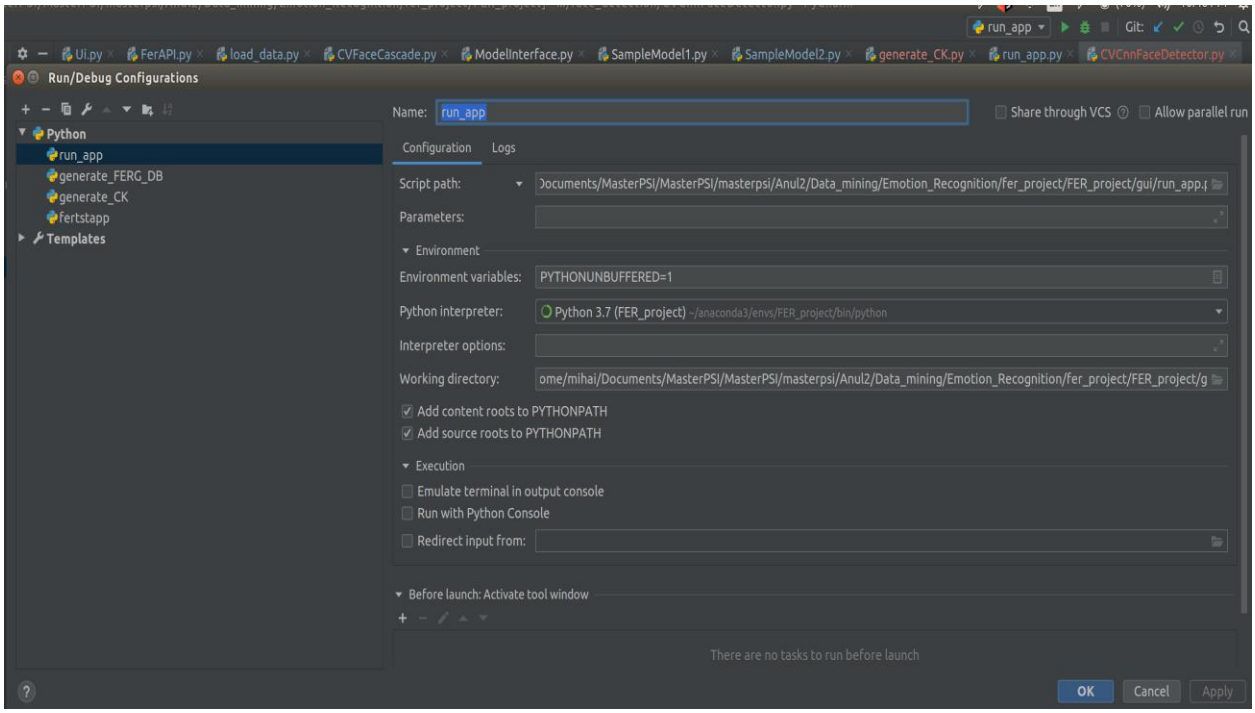
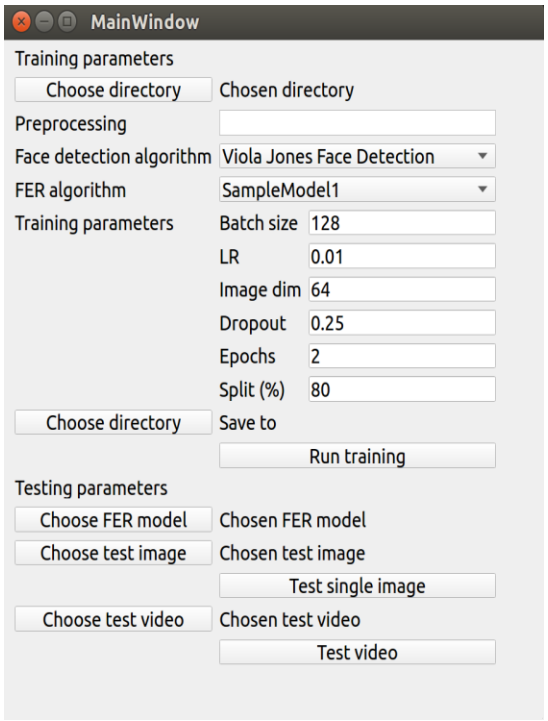
User guide

User guide for installing and running the project

1. System requirements
    a. Python 3 installed (ideally the Anaconda 3 distribution could be the most suitable)
    b. PyCharm Community (can be downloaded from https://www.jetbrains.com/pycharm/download/#section=linux)
    c. Nvidia Graphic Card (if want to use GPU for training)
    d. Nvidia and Cuda drivers
2. Steps to run the application:
    a. Open PyCharm and open the project
    b. Create a Conda virtual environment as described in the following: https://www.jetbrains.com/help/pycharm/conda-support-creating-conda-virtual-environment.html. This creates a separate environment in which only the necessary packages to run the application will be installed
    c. Install the necessary requirements by running the following command: **pip install -r requirements.txt.** It can often be the case that the mentioned packages (especially the GPU related like **tensorflow-gpu**) are not compatible with the version of the nividia or cuda drivers. In this case, they will have be replaced with the corresponding versions.
    d. Add a new configuration. This step will create a configuration which will run a script. Click on the small arrow near the run button (near the run_app button in this case). After the "Run/Debug Configurations" window opens, click on the "+" sign in order to add a new configuration. Select the python script to be ran (in this case search for the path towards the "run_app.py" script – it is located in the GUI folder), then select the python interpreter.
    e. Edit the run_app.py script (situated in gui folder) with the path towards the files containing the classification data



3. Run the Application
    a. Run the application by clicking on the green arrow horizontally oriented from the upper right side



b. Train a model. The first part of the UI is destined for choosing parameters for training a model. This step will generate a series of files: a “h5” file, containing the trained weights of the model and a “LabelBinarizer”, containing the labels which are extracted as a function of the existing emotions
    - Select the path to the training dataset directory. The directory containing the dataset should contain only folder names corresponding to the name of the emotions (e.g. “happy”, “fear”, “angry”). This step is very important for the LabelBinarizer.
    - Select the face detection algorithm (Viola Jones or DNN)
    - Select the CNN model
    - Select the training parameters
    - Select a directory where the model shall be saved
c. Testing the model. The second part of the UI is destined for choosing the parameters for testing the model
    - Choose the FER (face emotion recognition) model. Navigate to the path where the model has been saved and select the file containing the name of the model (e.g. SimpleModel1 – be careful, select the file which was created without the extension “.h5”).
    - Choose the data to test on:
        - Choose an image to be tested and press the “Test single image” button
        - Choose a video to test on and press the “Test video” button