Creating a Virtual Environment to use the ECG App

The steps of creating a virtual environment for the application is similar to the ones outlined in **virtualEnv_anaconda_installation** document. I will assume you have installed Anaconda as we will use this to create the virtual environment. I have added instructions for both Windows 10 and macOS.

This application should be used to manually clean ECG data. It will load CSV files that you processed using a pipeline (based on the ECG tutorials). You can plot the data and edit the R-peaks (marked as upside-down triangles). Then you can save the dataset and plot another dataset.

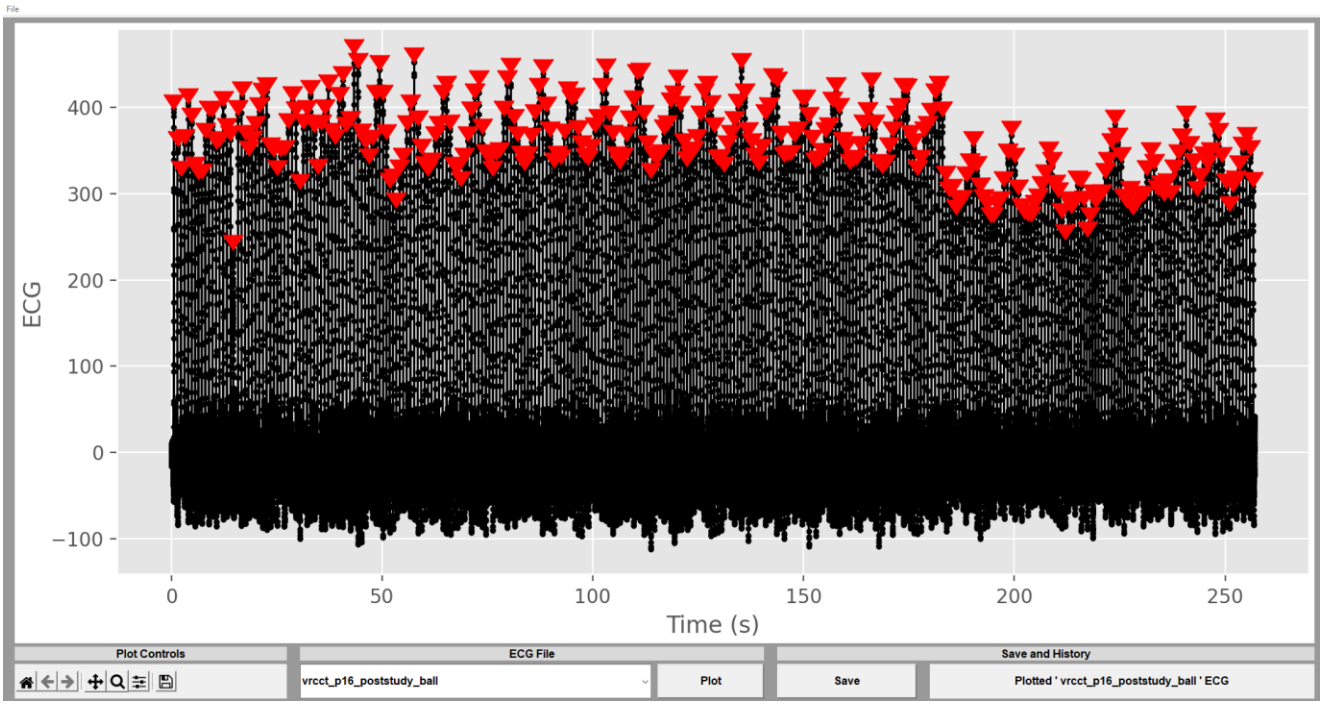
Creating a Virtual Environment

1. Open Anaconda Prompt
    a. For Windows, click Start and search for “Anaconda Prompt” from the menu and select it
    b. For macOS, press Command and Space simultaneously to open Spotlight and type Terminal. Press Return/Enter
2. Creating a virtual environment with a specific version of Python. In this case, we will use Python 3.9 as it has everything preinstalled for us to run the ecgApp.py file.
    a. In the Anaconda Prompt/terminal, type “conda create -n ecgApp python=3.9 anaconda” and press Enter/Return

And that’s it! We can run the Tkinter App. In the future, I want to create a standalone app that can be run on both Mac and Windows rather than as a Python script. The Application is easy to use. In order to use it, you need to activate the ecgApp virtual environment via conda and open the ecgApp.py on the command line.

Opening ECG APP

1. Open Anaconda Prompt
    a. For Windows, click Start and search for “Anaconda Prompt” from the menu and select it
    b. For macOS, press Command and Space simultaneously to open Spotlight and type Terminal. Press Return/Enter
2. Activate your Virtual Environment
    a. Type “conda activate ecgApp” and press Return/Enter button
3. Change the working directory to where the ecgApp.py file is using **cd** in terminal (e.g. "cd Desktop" or “cd Downloads”)
4. Type “python ecgApp.py” and press Return/Enter. The Application should open (see below)



Using this Application

1. Load in the datasets
    a. If you go up the file dropdown menu in the upper left corner, click on it, and choose "**select CSV"**
    b. You will be prompted to select the **folder** where you have stored your CSV datasets. After doing so, the application will load in the data sets (this may take a bit of time)
2. Plot the dataset
    a. There is a drop-down menu named **ECG File** at the bottom to select what CSV file you want to plot
    b. After choosing what file you want to plot, you can plot it by pressing the button **Plot** next to the drop-down menu ECG File
    c. Each red upside-down triangle represents an R-peaks while the black line with black dots represents the ECG signal
3. Scrolling through the data using the **Plot Control Menu (on the bottom left)**
    a.  will reset the plot to its original view (as shown above)
    b.  will load previous and forward views
    c.  is the navigation button to zoom in on each axis or move the plot
    d.  is the zoom button to zoom in on a user defined rectangle
    e.  is the configure subplot button to allow you the further configure plot parameters

f.  is the Save button to save the current view as a PNG file

4. To **edit R-peaks**, you need to deselect all plot control buttons. When this is done, you can pick any point (black dot) to mark it as a R-peak (upside-down red triangle). You can also deselect an R-peak if you feel that it has been misclassified as an R-peak.
5. You can save your edited ECG data by clicking the **Save** button in the **Save and History** section. There is a text box there that tells you when the data set is saved or loaded.