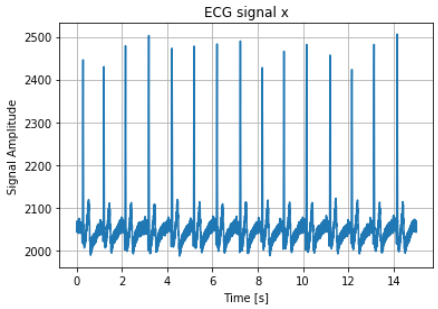
step1: load data from file

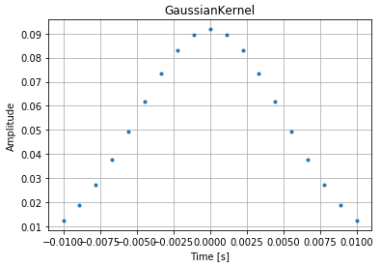
step2: check and handle missing values

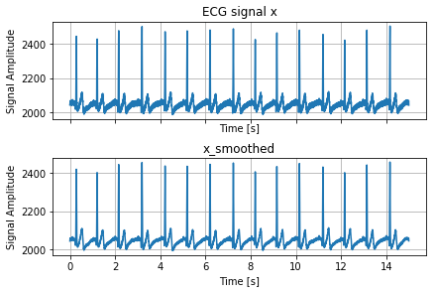
step3: plot the signal



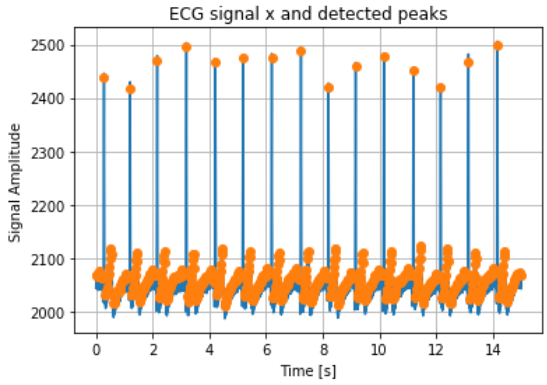
step4: smooth the signal using cross-correlation with Gaussian Kernel

(you may need to adjust the kernel parameter)





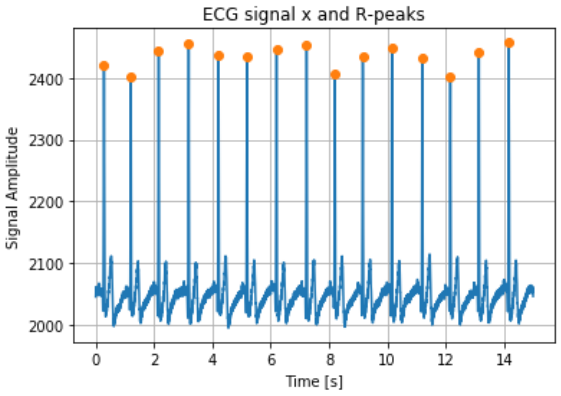
step5: peak detection



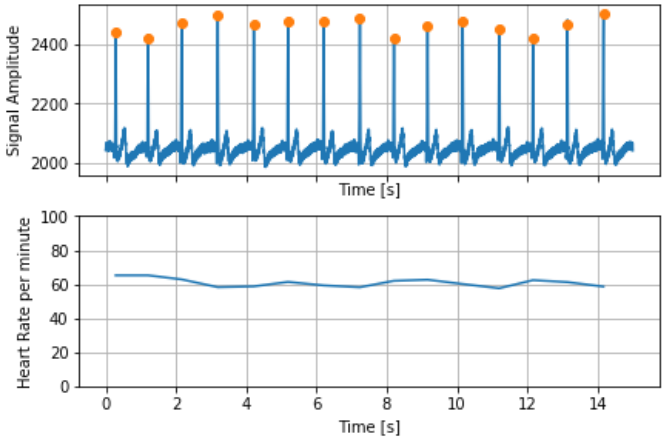
step6: peak selection and visualization

select those peaks with amplitude values > threshold (you can manually set the threshold)

develop a method to compute the threshold (bonus 10 points)



Step 7: calculate heart rate per minute based on the R-peaks



step8: create a new dataframe and save it to a csv file

two columns: R-peak, and heart-rate (based on the figure above)

Grading:

total 100 points (12.5 points per step)

bonus: 10 points

Program in a Jupyter notebook file

Also, read the data_info.ipynb