ECG_GetPeaks_WriteBS

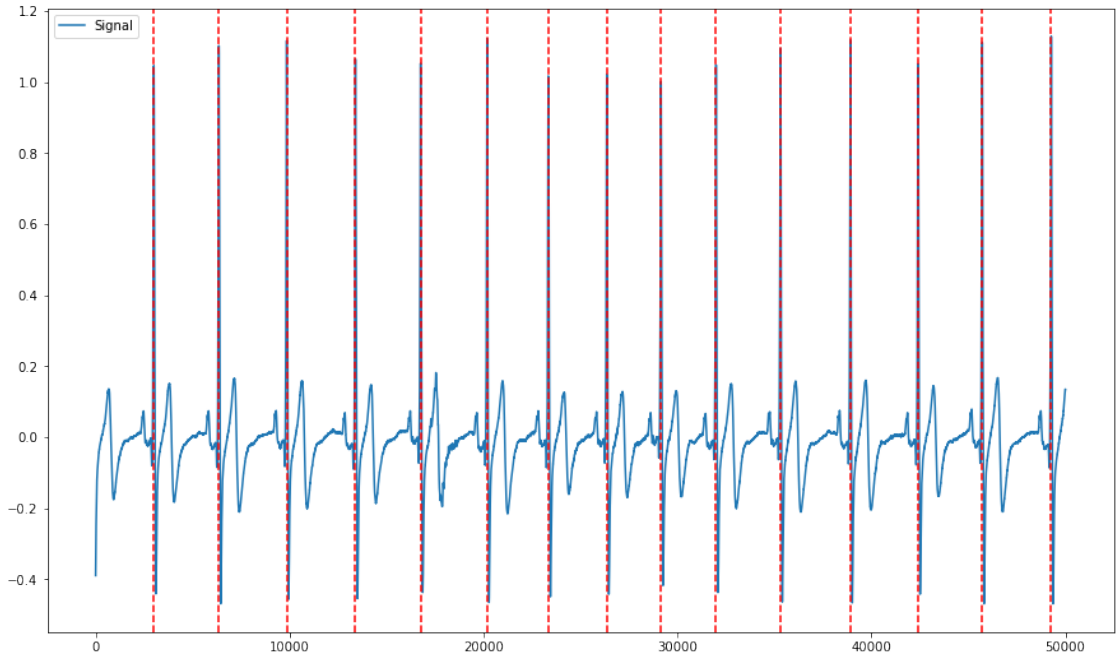
May 30, 2021

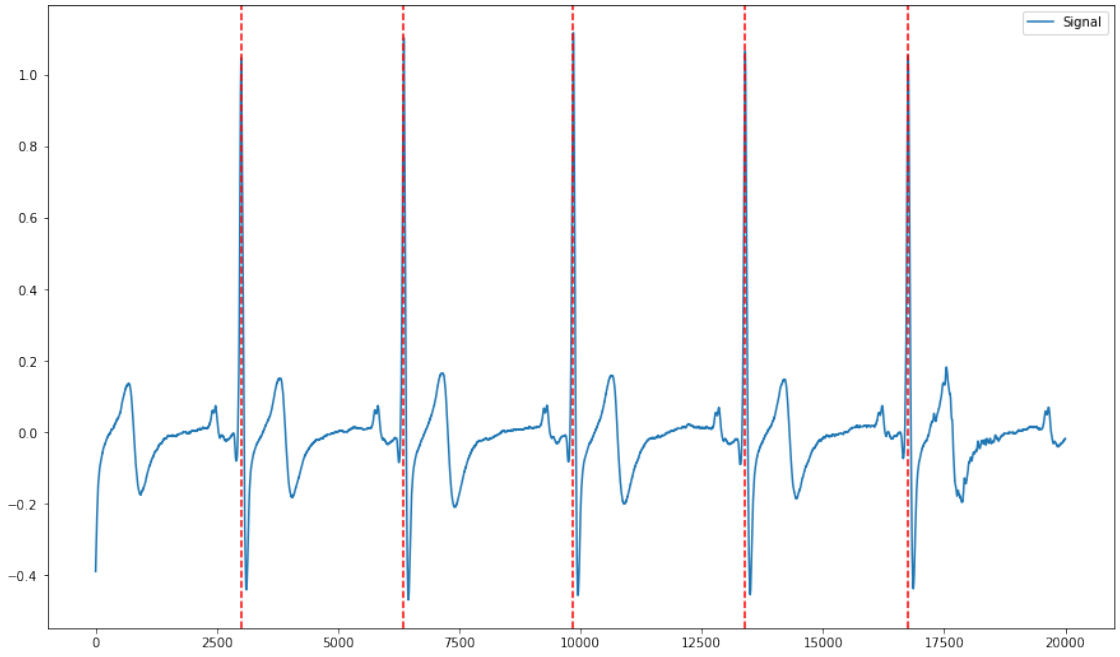
[19]:
```
# Load NeuroKit and other useful packages
import neurokit2 as nk
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
plt.rcParams['figure.figsize'] = [15, 9]  # Bigger images
```

[20]:
```
# Retrieve ECG data from data folder (sampling rate= 1000 Hz)
ecg_signal = nk.data(dataset="ecg_3000hz")['ECG']
# Extract R-peaks locations
_, rpeaks = nk.ecg_peaks(ecg_signal, sampling_rate=3000)
```

[21]:
```
# Visualize R-peaks in ECG signal
plot = nk.events_plot(rpeaks['ECG_R_Peaks'], ecg_signal)

# Zooming into the first 5 R-peaks
plot = nk.events_plot(rpeaks['ECG_R_Peaks'][:5], ecg_signal[:20000])
```

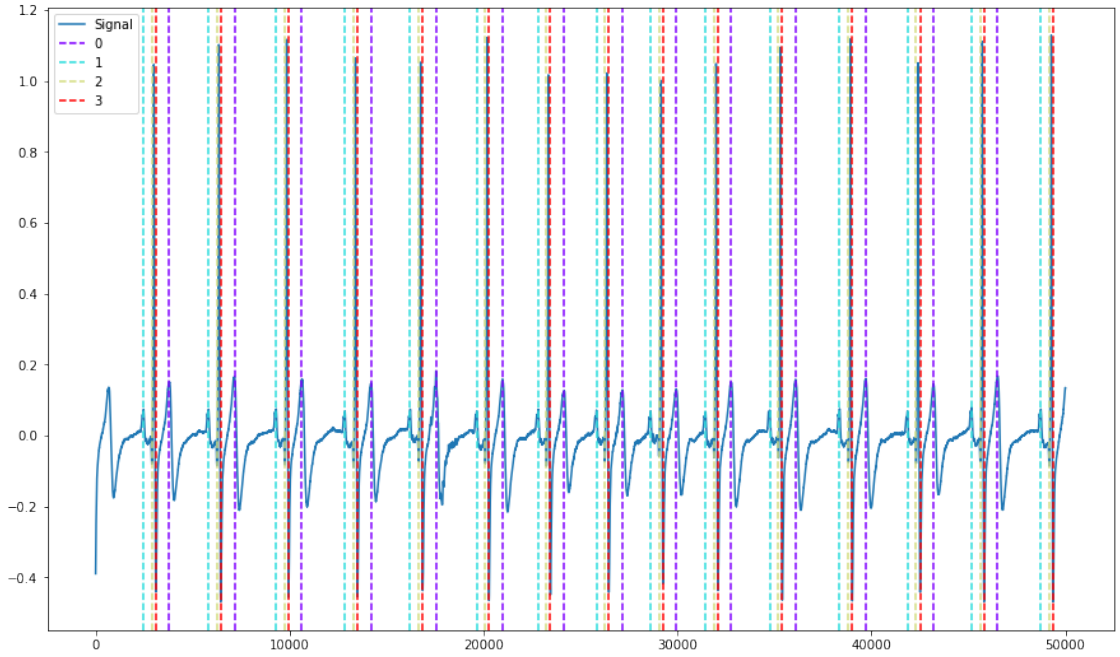


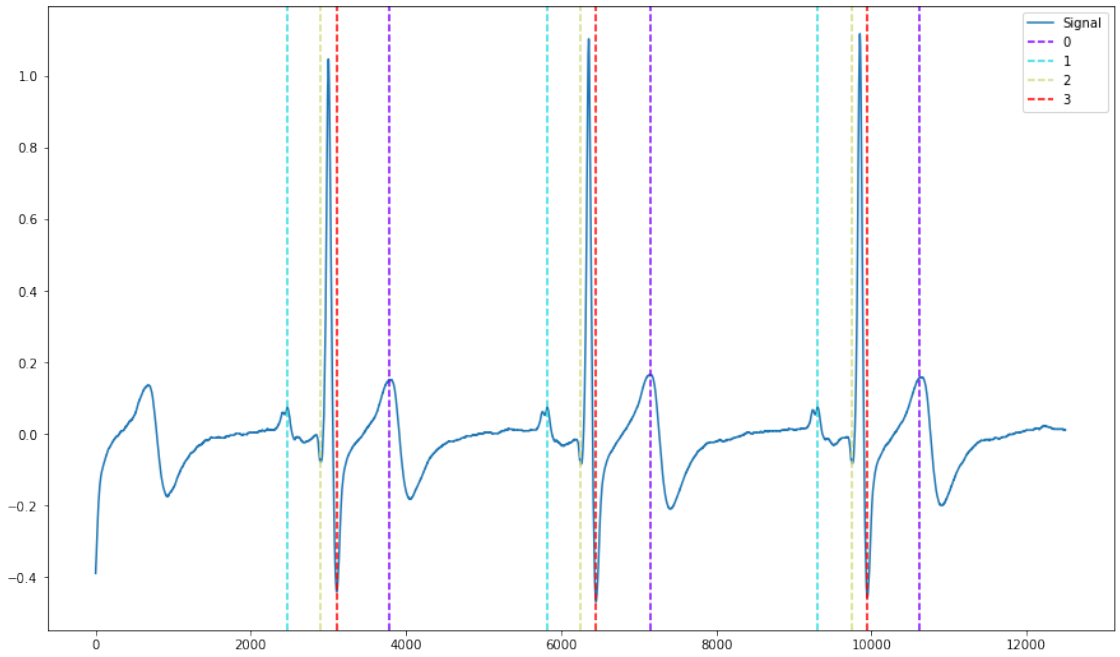


[22]:
```
# Delineate the ECG signal
_, waves_peak = nk.ecg_delineate(ecg_signal, rpeaks, sampling_rate=3000)
```

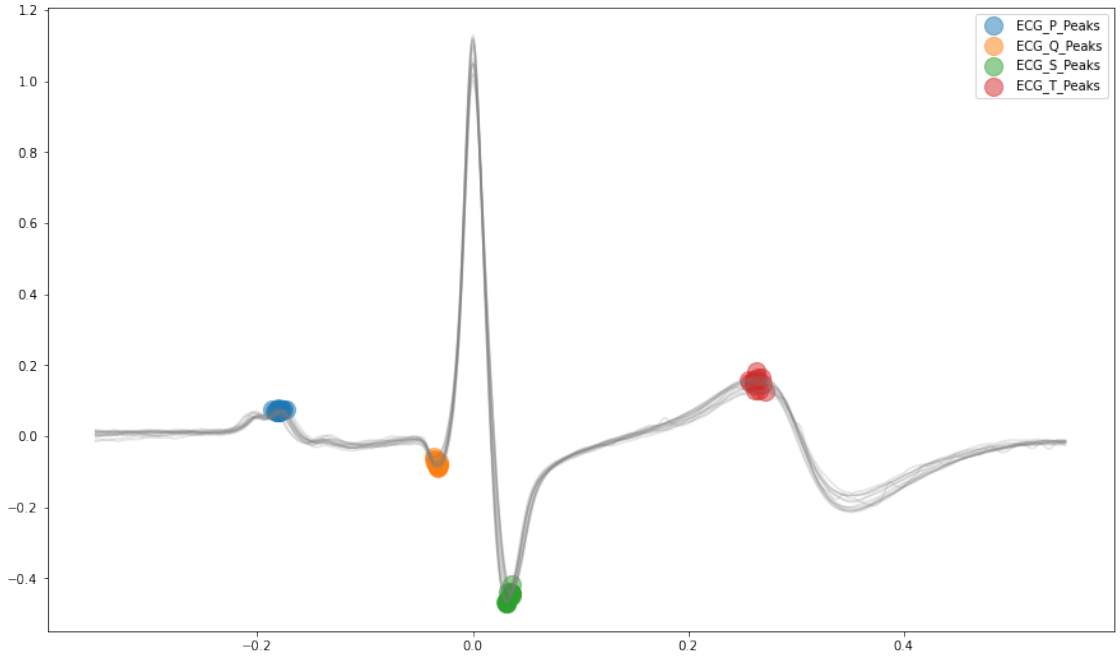
[23]:
```
# Visualize the T-peaks, P-peaks, Q-peaks and S-peaks
plot = nk.events_plot([waves_peak['ECG_T_Peaks'],
                       waves_peak['ECG_P_Peaks'],
                       waves_peak['ECG_Q_Peaks'],
                       waves_peak['ECG_S_Peaks']], ecg_signal)

# Zooming into the first 3 R-peaks, with focus on T_peaks, P-peaks, Q-peaks and␣
 ↪S-peaks
plot = nk.events_plot([waves_peak['ECG_T_Peaks'][:3],
                       waves_peak['ECG_P_Peaks'][:3],
                       waves_peak['ECG_Q_Peaks'][:3],
                       waves_peak['ECG_S_Peaks'][:3]], ecg_signal[:12500])
```

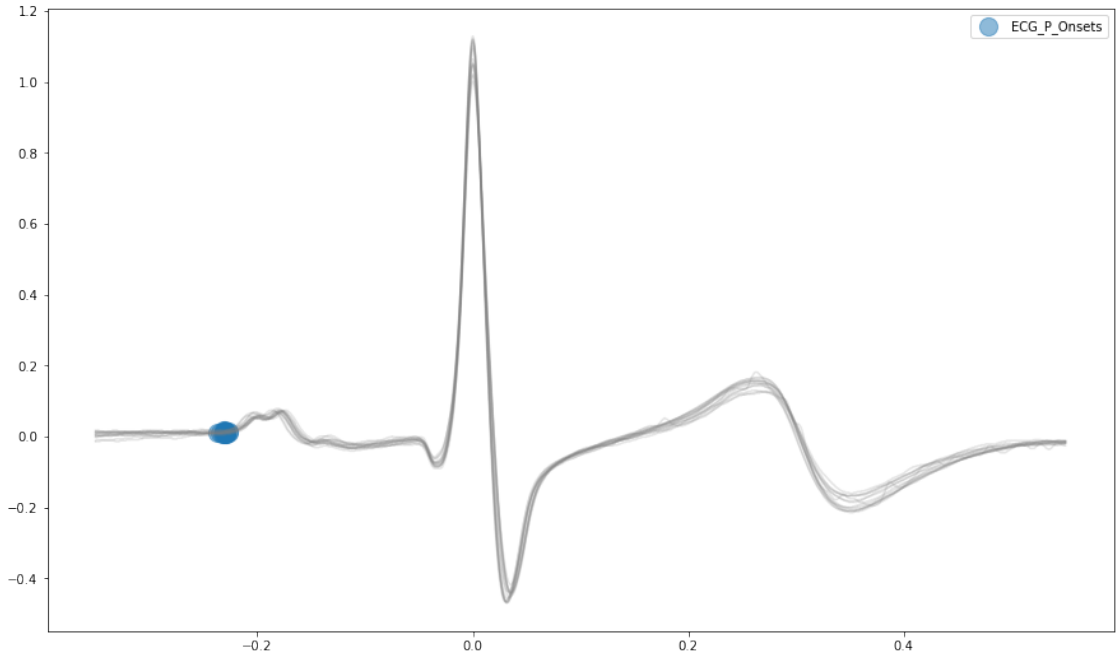




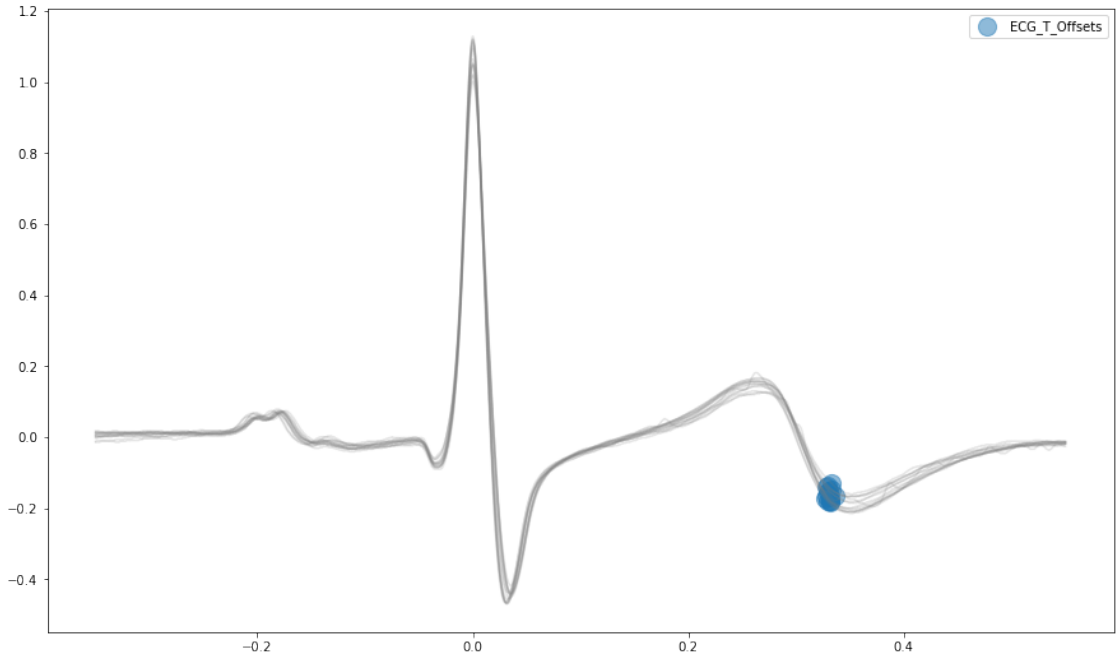
[24]:
```
# Delineate the ECG signal and visualizing all peaks of ECG complexes
_, waves_peak = nk.ecg_delineate(ecg_signal, rpeaks, sampling_rate=3000,␣
↪show=True, show_type='peaks')
```



[25]:
```
# Delineate the ECG signal and visualizing all P-peaks boundaries
signal_peak, waves_peak = nk.ecg_delineate(ecg_signal, rpeaks,␣
↪sampling_rate=3000, show=True, show_type='bounds_P')
```



[27]:
```
# Delineate the ECG signal and visualizing all T-peaks boundaries
signal_peaj, waves_peak = nk.ecg_delineate(ecg_signal, rpeaks,␣
↪sampling_rate=3000, show=True, show_type='bounds_T')
```


ECG_T_Offsets
1.2
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.4
−0.2
0.0
0.2
0.4

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