Meeting 4

9/30/21

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Deliverables

What did I have to do?

- Create function for epoch detection
- Apply changePeaks_epochDetect() function to variable
- Plot variable over time
- Overlay epoch borders from the function
- Extra: Implement own epoch detection algorithm

Methodology and Learnings

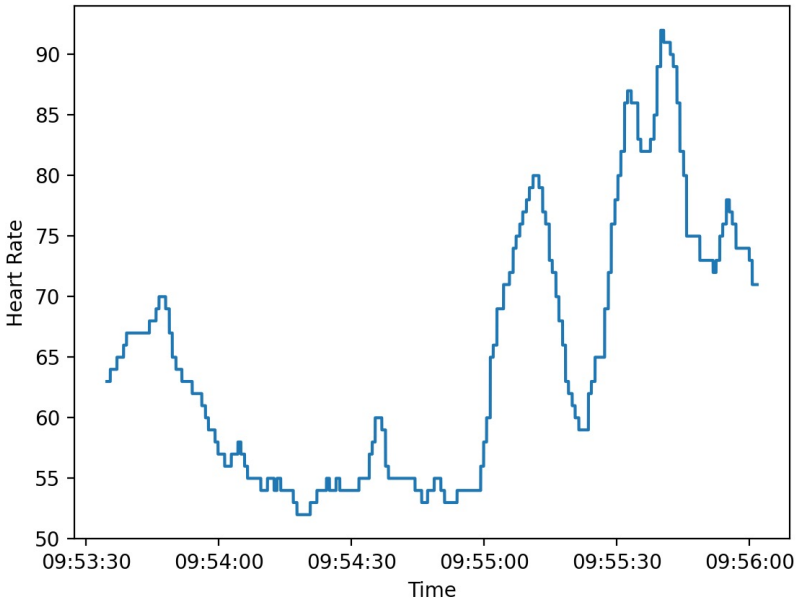
How did I do it?

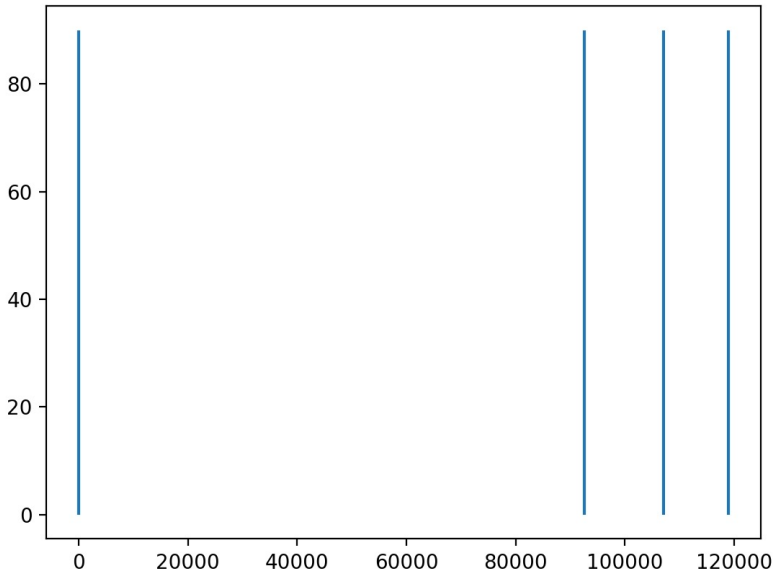
- Added function to existing script
- Extracted columns from dataframe
- Used vhdr file for sample rate
- Imported datetime module for plotting time
- Used values in dictionary to plot epoch lines

What did I learn?

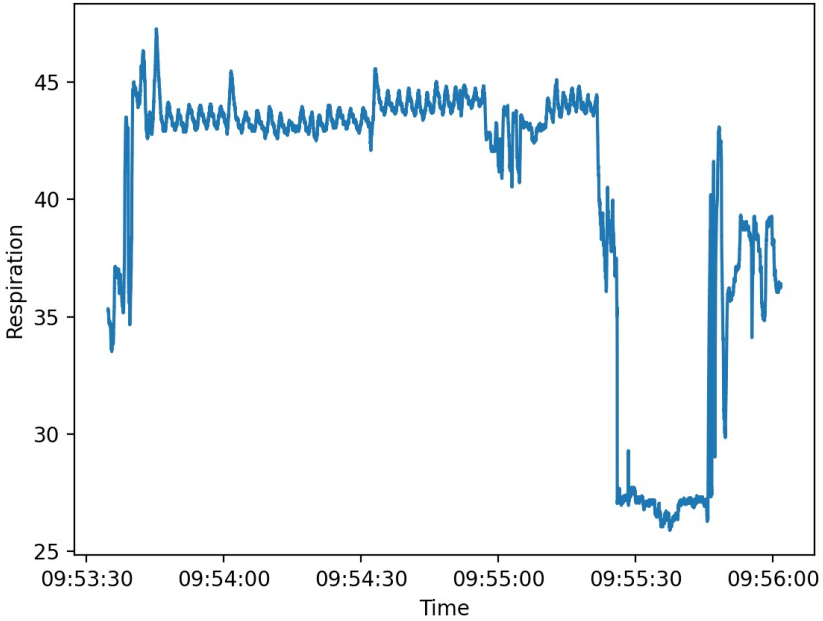
- Datetime module
- Plots (axlines, vlines)

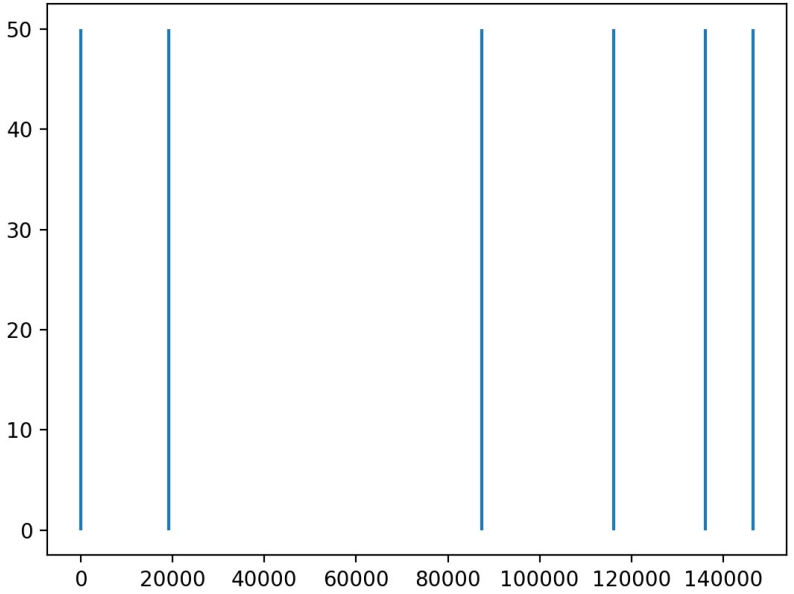
Results


Heart Rate
90
85
80
75
70
65
60
55
50
09:53:30
09:54:00
09:54:30
09:55:00
09:55:30
09:56:00
Time


80
60
40
20
0
0
20000
40000
60000
80000
100000
120000

Results cont.





Results cont.

```
if __name__ == '__main__':
    df = read_eeg("./2020_06_04_T05_U00T_EEG01.vhdr")

    # biometric arrays
    hr_column = df.loc[:, "HR"]
    resp_column = df.loc[:, "Resp."]

    # Results for heart rate epoch detection
    e_dict = changePeaks_epochDetect(hr_column, 4, 5, 2000)
    print("Epochs for heart rate: ", e_dict)

    # Results for resp epoch detection
    e_dict = changePeaks_epochDetect(resp_column, 6, 5, 2000)
    print("Epochs for Fp1: ", e_dict)

    # plot biometrics over time
    time = [datetime.datetime.now() + datetime.timedelta(milliseconds=i) for i in range(146884)]
    f1 = plt.figure(1)
    plt.xlabel("Time")
    plt.ylabel("Heart Rate")
    plt.plot(time, hr_column)

    f2 = plt.figure(2)
    plt.xlabel("Time")
    plt.ylabel("Respiration")
    plt.plot(time, resp_column)
```

```
# plot epoch lines for heart rate
f3 = plt.figure(3)
plt.vlines(x=0, ymin=0, ymax=90)
plt.vlines(x=107088, ymin=0, ymax=90)
plt.vlines(x=92604, ymin=0, ymax=90)
plt.vlines(x=118927, ymin=0, ymax=90)

# plot epoch lines for respiration
f4 = plt.figure(4)
plt.vlines(x=0, ymin=0, ymax=50)
plt.vlines(x=87347, ymin=0, ymax=50)
plt.vlines(x=19131, ymin=0, ymax=50)
plt.vlines(x=146502, ymin=0, ymax=50)
plt.vlines(x=136142, ymin=0, ymax=50)
plt.vlines(x=116097, ymin=0, ymax=50)

plt.show()
```