Meeting 10

11/11/21

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Deliverables

- Create requirements.txt for libraries used in function
- Complete function to merge epochbm_dict and non-EEG biometrics
- Assist front-end if necessary
- If time, merge all of the epoch biometric dictionaries
    - EEG, non-EEG, and pupil data

Methodology and Learnings

- Used command “pip freeze > requirements.txt” in PyCharm IDE
- Imported biometricVar_per_epoch function
- Added non-EEG data to dictionary

Results

```
32  # import functions
33  from scipy import signal
34  from biometricVar_per_epoch import *
35
36  # define function
37  def getEpochbm_dict(eeg_data, epoch_dict):
38
39      df = eeg_data.iloc[:, 0:64]     # create dataframe for 64 signals
40      fs = 500                        # Sampling rate of 500 Hz
41      epochbm_dict = dict()           # final dictionary
42
43      # Read dictionary with non-eeg data
44      non_eeg_dict = biometricVar_per_epoch(epoch_dict, eeg_data)
```

```
    # add time index ranges and both EEG and non-EEG biometric dataframes to final dictionary in each epoch
    epochbm_dict[e] = [[start_idx, end_idx], bands_df, non_eeg_dict[e][1]]

return epochbm_dict
```

Results – cont.

```
1 : [0, 42663]
              Delta         Theta         Alpha          Beta         Gamma
Fp1   4.889927e-11  8.423252e-12  2.642536e-12  4.359902e-13  1.187204e-13
Fp2   4.390949e-11  7.402872e-12  2.419045e-12  4.088885e-13  1.127960e-13
F3    4.619386e-12  1.046754e-12  1.435916e-12  3.700543e-13  6.363369e-14
F4    3.606577e-12  9.316499e-13  1.307190e-12  4.907973e-13  1.646644e-13
C3    1.533518e-12  5.165224e-13  1.116517e-12  2.897726e-13  1.058815e-13
...            ...           ...           ...           ...           ...
PO8   1.857688e-11  2.076086e-12  2.389193e-12  7.807219e-13  6.391389e-13
Fpz   3.610387e-11  6.126865e-12  2.290647e-12  3.633384e-13  9.878641e-14
CPz   4.051544e-12  1.029351e-12  1.191260e-12  2.830822e-13  6.620627e-14
POz   4.115669e-12  1.394971e-12  1.448764e-12  3.224239e-13  7.157896e-14
TP10  6.903166e-12  1.633495e-12  1.508446e-12  4.477264e-13  2.529003e-13

[64 rows x 5 columns]
             HR      Temp.    SpO2
0           NaN        NaN     NaN
1           NaN        NaN     NaN
2           NaN        NaN     NaN
3           NaN        NaN     NaN
4           NaN        NaN     NaN
...         ...        ...     ...
42658   54.0734  31.847887  0.0001
42659   54.0730  31.847900  0.0001
42660   54.0726  31.847912  0.0001
42661   54.0722  31.847925  0.0001
42662   54.0718  31.847938  0.0001
```

```
[42663 rows x 3 columns]
2 : [42663, 91494]
              Delta         Theta         Alpha          Beta         Gamma
Fp1   1.779313e-11  4.163003e-12  2.456524e-12  4.575242e-13  1.391357e-13
Fp2   1.735419e-11  3.567409e-12  2.409759e-12  4.416931e-13  1.254445e-13
F3    3.086889e-12  9.584300e-13  1.509474e-12  3.742806e-13  1.149803e-13
F4    3.546418e-12  7.884749e-13  1.662349e-12  5.552834e-13  1.764324e-13
C3    1.668989e-12  5.598393e-13  1.319197e-12  3.756272e-13  2.212387e-13
...            ...           ...           ...           ...           ...
PO8   4.876703e-12  1.508113e-12  2.394406e-12  8.061991e-13  6.947308e-13
Fpz   1.415141e-11  3.031471e-12  2.178861e-12  3.832828e-13  1.030079e-13
CPz   4.778353e-12  1.285299e-12  1.542061e-12  3.146615e-13  7.138623e-14
POz   3.436101e-12  1.285270e-12  1.679310e-12  3.305556e-13  7.514902e-14
TP10  4.792582e-12  1.307609e-12  1.566548e-12  5.535721e-13  4.254088e-13

[64 rows x 5 columns]
             HR      Temp.    SpO2
42663   54.0714  31.847950  0.0001
42664   54.0710  31.847963  0.0001
42665   54.0706  31.847975  0.0001
42666   54.0702  31.847987  0.0001
42667   54.0698  31.848000  0.0001
...         ...        ...     ...
91489   68.6582  31.847987  0.0001
91490   68.6606  31.848000  0.0001
91491   68.6630  31.848012  0.0001
91492   68.6654  31.848025  0.0001
91493   68.6678  31.848038  0.0001
```

Results – cont.

```
[48831 rows x 3 columns]
3 : [91494, 100828]
              Delta         Theta         Alpha          Beta         Gamma
Fp1   3.686808e-11  1.342660e-11  3.258992e-12  4.835010e-13  1.180875e-13
Fp2   3.880886e-11  1.192793e-11  3.632454e-12  5.125668e-13  1.116843e-13
F3    3.823898e-12  1.288069e-12  1.772689e-12  4.379029e-13  8.694069e-14
F4    4.266782e-12  8.740953e-13  1.687049e-12  4.627807e-13  7.943096e-14
C3    1.942923e-12  7.721115e-13  1.710549e-12  4.022406e-13  2.026252e-13
...            ...           ...           ...           ...           ...
PO8   5.689757e-12  1.843980e-12  2.564200e-12  8.724193e-13  6.697649e-13
Fpz   2.894869e-11  9.988427e-12  3.003091e-12  4.496562e-13  1.039248e-13
CPz   3.819268e-12  1.218681e-12  1.507282e-12  3.157477e-13  7.078322e-14
POz   4.109213e-12  1.503513e-12  1.876078e-12  3.411803e-13  7.001991e-14
TP10  6.863945e-12  1.823335e-12  1.594468e-12  5.759919e-13  4.291954e-13

[64 rows x 5 columns]
              HR      Temp.    SpO2
91494   68.6702  31.848050  0.0001
91495   68.6726  31.848063  0.0001
91496   68.6750  31.848075  0.0001
91497   68.6774  31.848087  0.0001
91498   68.6798  31.848100  0.0001
...         ...        ...     ...
100823  77.3720  31.806275  0.0001
100824  77.3706  31.806275  0.0001
100825  77.3692  31.806275  0.0001
100826  77.3678  31.806275  0.0001
100827  77.3664  31.806275  0.0001
```

```
[9334 rows x 3 columns]
4 : [100828, 129160]
              Delta         Theta         Alpha          Beta         Gamma
Fp1   1.039539e-10  1.732446e-11  3.774389e-12  4.953543e-13  2.783105e-13
Fp2   1.363205e-10  1.867575e-11  4.003513e-12  4.997233e-13  3.152264e-13
F3    1.458678e-10  3.158588e-12  1.779845e-12  5.886986e-13  2.358607e-13
F4    7.947679e-11  2.148810e-12  1.908817e-12  4.888055e-13  1.774858e-13
C3    3.032301e-11  1.477255e-12  1.411105e-12  5.210646e-13  5.899476e-13
...            ...           ...           ...           ...           ...
PO8   3.191164e-10  1.375950e-11  4.024865e-12  1.629463e-12  1.539830e-12
Fpz   1.002873e-10  1.368166e-11  3.596202e-12  4.527091e-13  2.282671e-13
CPz   3.403485e-11  1.510730e-12  1.836625e-12  3.005631e-13  9.097610e-14
POz   1.260696e-10  1.259192e-11  3.722210e-12  8.697276e-13  2.145512e-13
TP10  1.126437e-10  4.017120e-12  2.287776e-12  1.054095e-12  1.055179e-12

[64 rows x 5 columns]
              HR      Temp.      SpO2
100828  77.3650  31.806275  0.000100
100829  77.3636  31.806275  0.000100
100830  77.3622  31.806275  0.000100
100831  77.3608  31.806275  0.000100
100832  77.3594  31.806275  0.000100
...         ...        ...       ...
129155  89.8140  31.866862  0.000092
129156  89.8142  31.866850  0.000092
129157  89.8144  31.866837  0.000092
129158  89.8146  31.866825  0.000092
129159  89.8148  31.866813  0.000092
```