Main.py

1. Line28-33: Create Dataset for 4 folds cross validation

* data\_preprocessing.py file is necessary
* Input: wb\_info\_250.csv
* Output:

1. Affect\_4cv.pkl
2. ﻿Empathy\_4cv.pkl
3. ﻿Encoding\_4cv.pkl
4. ﻿GoNogo\_4cv.pkl
5. ﻿Resting\_4cv.pkl
6. ﻿Retrieval\_4cv.pkl
7. ﻿Reward\_4cv.pkl
8. ﻿ToM\_4cv.pkl
9. ﻿WorkingMem\_4cv.pkl

2. Line35-36: Find optimal hyperparameter set for each fold per task

* find\_hyperparameter.py file is necessary
* Input:
  + Affect\_4cv.pkl
  + ﻿Empathy\_4cv.pkl
  + ﻿Encoding\_4cv.pkl
  + ﻿GoNogo\_4cv.pkl
  + ﻿Resting\_4cv.pkl
  + ﻿Retrieval\_4cv.pkl
  + ﻿Reward\_4cv.pkl
  + ﻿ToM\_4cv.pkl
  + ﻿WorkingMem\_4cv.pkl
  + index\_and\_y\_conti\_4cv.pkl
* Output:
  + hyperparams\_conti\_268\_4cv\_hs.pkl

3. Line38-39: Using selected hyperparameter, run the model and save predicted values

* run.py file is necessary
* Input:
  + Affect\_4cv.pkl
  + ﻿Empathy\_4cv.pkl
  + ﻿Encoding\_4cv.pkl
  + ﻿GoNogo\_4cv.pkl
  + ﻿Resting\_4cv.pkl
  + ﻿Retrieval\_4cv.pkl
  + ﻿Reward\_4cv.pkl
  + ﻿ToM\_4cv.pkl
  + ﻿WorkingMem\_4cv.pkl
  + index\_and\_y\_conti\_4cv.pkl
  + hyperparams\_conti\_268\_4cv\_hs.pkl
* Output:
  + predict\_across\_tasks\_conti\_268.pkl

4. Line41-42: Deconvolutional NN for creating partial derivative matrix

* make\_derivative.py file is necessary
* Input:
  + Affect\_4cv.pkl
  + ﻿Empathy\_4cv.pkl
  + ﻿Encoding\_4cv.pkl
  + ﻿GoNogo\_4cv.pkl
  + ﻿Resting\_4cv.pkl
  + ﻿Retrieval\_4cv.pkl
  + ﻿Reward\_4cv.pkl
  + ﻿ToM\_4cv.pkl
  + ﻿WorkingMem\_4cv.pkl
  + index\_and\_y\_conti\_4cv.pkl
  + hyperparams\_conti\_268\_4cv\_hs.pkl
* Output:
  + csv folder is created then following files will be saved
    1. Affect\_conti\_268\_cv1\_derivative\_Affect\_mean.csv
    2. Affect\_conti\_268\_cv2\_derivative\_Affect\_mean.csv
    3. Affect\_conti\_268\_cv3\_derivative\_Affect\_mean.csv
    4. Affect\_conti\_268\_cv4\_derivative\_Affect\_mean.csv
    5. Empathy\_conti\_268\_cv1\_derivative\_Empathy\_mean.csv
    6. Empathy\_conti\_268\_cv2\_derivative\_Empathy\_mean.csv
    7. Empathy\_conti\_268\_cv3\_derivative\_Empathy\_mean.csv
    8. Empathy\_conti\_268\_cv4\_derivative\_Empathy\_mean.csv
    9. Encoding\_conti\_268\_cv1\_derivative\_Encoding\_mean.csv
    10. Encoding\_conti\_268\_cv2\_derivative\_Encoding\_mean.csv
    11. Encoding\_conti\_268\_cv3\_derivative\_Encoding\_mean.csv
    12. Encoding\_conti\_268\_cv4\_derivative\_Encoding\_mean.csv
    13. GoNogo\_conti\_268\_cv1\_derivative\_GoNogo\_mean.csv
    14. GoNogo\_conti\_268\_cv2\_derivative\_GoNogo\_mean.csv
    15. GoNogo\_conti\_268\_cv3\_derivative\_GoNogo\_mean.csv
    16. GoNogo\_conti\_268\_cv4\_derivative\_GoNogo\_mean.csv
    17. Resting\_conti\_268\_cv1\_derivative\_Resting\_mean.csv
    18. Resting\_conti\_268\_cv2\_derivative\_Resting\_mean.csv
    19. Resting\_conti\_268\_cv3\_derivative\_Resting\_mean.csv
    20. Resting\_conti\_268\_cv4\_derivative\_Resting\_mean.csv
    21. Retrieval\_conti\_268\_cv1\_derivative\_Retrieval\_mean.csv
    22. Retrieval\_conti\_268\_cv2\_derivative\_Retrieval\_mean.csv
    23. Retrieval\_conti\_268\_cv3\_derivative\_Retrieval\_mean.csv
    24. Retrieval\_conti\_268\_cv4\_derivative\_Retrieval\_mean.csv
    25. Reward\_conti\_268\_cv1\_derivative\_Reward\_mean.csv
    26. Reward\_conti\_268\_cv2\_derivative\_Reward\_mean.csv
    27. Reward\_conti\_268\_cv3\_derivative\_Reward\_mean.csv
    28. Reward\_conti\_268\_cv4\_derivative\_Reward\_mean.csv
    29. ToM\_conti\_268\_cv1\_derivative\_ToM\_mean.csv
    30. ToM\_conti\_268\_cv2\_derivative\_ToM\_mean.csv
    31. ToM\_conti\_268\_cv3\_derivative\_ToM\_mean.csv
    32. ToM\_conti\_268\_cv4\_derivative\_ToM\_mean.csv
    33. WorkingMem\_conti\_268\_cv1\_derivative\_WorkingMem\_mean.csv
    34. WorkingMem\_conti\_268\_cv2\_derivative\_WorkingMem\_mean.csv
    35. WorkingMem\_conti\_268\_cv3\_derivative\_WorkingMem\_mean.csv
    36. WorkingMem\_conti\_268\_cv4\_derivative\_WorkingMem\_mean.csv

draw\_brainplots.py

* Input:
  + Files in the csv folder from main.py
  + label.pkl
* Output:
  + brain\_plot folder is created then following files will be saved
    - empathy\_node.pdf
    - reward\_node.pdf
    - retrieval\_node.pdf