

1. **Task Description:** Given train dataset “train_data.csv”, find the best model for the below tasks

A. **Input Features:** Morphological phenotypes

- i. Colum E-BV (ST***CV) : Cortical Volume of 70 brain regions
- ii. Colum BW-EN (ST***TA) : Average Thickness of 70 brain regions
- iii. Beware of missing features (refer to Professor’s lecture on imputation)

B. **Task 1 (3-class Classification):** Predict the diagnosis group of subjects i.

Colum A (DX_bl): Diagnosis group of subject

- 0: Cognitive normal
- 1: Mild cognitive impairment
- 2: Alzheimer’s disease

C. **Task 2 (3-logit Regression):** Predict the cognitive assessment scores of subjects i.

Colum B (ADAS11): Alzheimer’s Disease Assessment Scale (11 questions version) ii.

Colum C (ADAS13): Alzheimer’s Disease Assessment Scale (13 questions version) iii.

Colum D (MMSE): Mini-Mental State Examination

2. **Project Requirement**

A. Build the best model based on the given train dataset “train_data.csv”

B. Report scores for 10-fold cross validation

C. Compare with at least two other models

- i. i.e. Total of at least 6 models should be created

(One best model and two comparing models for each task)

D. Analyze and discuss your models and results in markdown cells

3. **Implementation Requirement**

A. Use the Google Colab (<https://colab.research.google.com/>)

B. You may use any library of your choice (e.g. Scikit-learn, Tensorflow, PyTorch, ...)

C. **(IMPORTANT) Submit two .ipynb files and model weight files**

- i. In each of the .ipynb file, write your name, ID, and the link to your Colab project

ii. First .ipynb file

1. This should contain your code, model comparisons, analysis, discussion etc.

iii. Second .ipynb file

1. This should contain code for loading and evaluating your best model

4. **Necessary Factors**

A. Evaluation scores on test dataset

- i. Test dataset will not be available to students

ii. Scores will be ranked and used as a reference for grading

B. Comparison, analysis, discussion etc.

- i. Write in English

ii. Be thorough and precise