What figures and tables should be in our paper

* 1. Trend plots of all hyperparameters

8 hyperparameters (epochs/batch\_size/L1/L2/dropout\_rate/learning\_rate/momentum/decay)

3 datasets (10year/15year/12year?)

Total 24 figures

Each hyperparameter has 10 trend plots, each represents a background setting

Analysis:

Uptrend(best point)/Downtrend(best point)/Steady State(the variance of values)

inflection point

* 1. Time compare and analysis
* a table with all hyperparameters and their total running time based on three datasets

[Hyperparameter; number of models each background setting; total number of models trained, total running time].

* trend plots related to the relationship between time and the value of hyperparameter, To find out whether there is a linear relationship between the value of the hyperparameter and the training time

8 hyperparameter \* 3 datasets (24 figures each with 10 background setting)

Each section of the thesis and the person in charge

* + - Introduction(background) **Yijun & Dr. Jiang**
      * Review a bit about prediction of breast cancer metastasis.
      * Review a bit about using deep learning to do the prediction.
      * Review a bit about grid search and hyperparameter tunning.
      * Talk about the rational to create the SHGS methods.
      * t, Dr. Jiang would give the feedback to Yijun, then Yijun could revise iti
    - Method **Yijun, Dr. Jiang, and Om**

2.1. Dataset

Dr. Jiang will introduce the dataset.

2.2. Single Hyperparameter Grid Search(SHGS)

* + Dr. Jiang has wrote about the SHGS method in the initial draft, and will further refine it.
  + Yijun needs to write about the implementation of the SHGS method.
  + Om can contribute to the method by including and explaining his follow chart.
  + Yijun will make sure the paragraphs from each of the coauthors being connected smoothly.
  + Each coauthor should proofread other coauthor’s writings.
    - Results. **Yijun, Om, and Dr. Jiang**

Each coauthor will describe the table/figure that he/she generated (tell what it is), and will give the rational for including it and the basic observations based it.

3.1. trend plot of values of target\_hyperparameter to test\_auc

3.2. trend plot of values of target\_hyperparameter to running\_time

* Yijun needs to clean the results of 15year & 10year to make each target\_hyperparameter only has 10 experiments
* Yijun needs to generate the trend plots of values of target\_hyperparameter to test\_auc/running\_time of 15year&10year dataset (for 15years dataset, need to retrieve points based on steps)
* Yijun needs to run 20year\_dataset(or 12year\_dataset)
  + - * Yijun needs to generate the trend plots of values of target\_hyperparameter to test\_auc/running\_time of 20year dataset
      * Yijun needs to make the table including all datasets and their running time

Analysis: there are 8 target\_hyperparameters in total (epochs/batch\_size/L1/L2/dropout\_rate/learning\_rate/momentum/decay)

* + - * Yijun could take responsibility of epochs/batch\_size/l1/l2/dropout\_rate
      * Om could take responsibility of learning\_rate/momentum/decay

Dr. Jiang will conduct retouching/refining.

* + - Result Analyses/Discussion: **Yijun, Om, and Dr. Jiang**

Results analyses are about further analyses and discussions about the results and obervation made based on the results. Suggest and Yijun and Om each discuss half of the 8 hyperparameters. Dr. Jiang will conduct retouching/refining.

* + - Conclusion: Yi Jun, and Dr. Jiang
      * Yijun needs to make the summary of all work and the prospect.

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| week | Experiment Running | Paper writing tasks**(Everything must be done by Friday of the week)**  Ps. All analysis work should include both test\_auc and running time  P(Ps). All tables/related figures will be stored in a directory called JYO\_paper on ONE DRIVE |
| 1(0619-0625) | 1.Yijun run 12years&20years dataset to do the estimation of time;  2.Dr. Jiang and Yijun choose one of these two datasets to use in the paper and Yijun make the running plan | |  | | --- | | **Yijun:**  1. needs to clean the results of 15year & 10year to make each target\_hyperparameter only has 10 experiments  2. needs to generate the trend plots of values of target\_hyperparameter to test\_auc/running\_time of 15year&10year dataset (for 15years dataset, need to retrieve points based on steps) | | **Om:**  1.could learn the basic concepts of neural network models and have a basic understanding of the meaning of each hyperparameter | |  | |
| 2(0625-0701) | Yijun run the third dataset | |  | | --- | | **Yijun:**  1. needs to do the analysis based on 15year/10year experiment results for ‘epochs’ and ‘batch\_size’  2. Yijun needs to finish the Introduction/ background part  3. Yijun needs to describe SHGS in more details based on Dr. Jiang’s description of the basic idea and make the draft | | **Om:**  1.needs to do the analysis based on 15year/10year experiment results for ‘learning\_rate’ | |  | |
| 3(0701-0707) | Yijun run the third dataset | |  | | --- | | **Yijun**:  1. needs to do the analysis based on 15year/10year experiment results for ‘L1’,’L2’,’dropout\_rate’  2. needs to clean the results of 20years/12years to make each target\_hyperparameter only has 10 experiments  3. needs to generate the trend plots of values of target\_hyperparameter to test\_auc/running\_time of 20year/12year\_dataset | | **Om:**  1.needs to do the analysis based on 15year/10year experiment results for ‘momentum’ and ‘decay’ | | **Dr. Jiang:**  needs to give the feedback of Introduction part and 2.2SHGS part to Yijun, then Yijun could revise them | |
| 4(0708-0714) |  | |  | | --- | | **Yijun:**  1.needs to complete the analysis of the five hyperparameters(‘epochs/batch\_size/L1/L2/dropout\_rate’)  2. needs to make the table of all running time on three datasets and do the general analysis  3. needs to revise Introduction and 2.2SHGS part based on Dr. Jiang’s feedback | | **Om:**  needs to complete the analysis of the three hyperparameters(‘learning\_rate’,’momentum’,’decay’) on all three datasets | | **Dr.Jiang:**  needs to introduces the dataset, which will be placed in 2.1 of the paper | |
| 5(0715-0721) |  | |  | | --- | | **Yijun:**  1. needs to organize and integrate all parts so far  2. needs to finish the Conclusion part | |  | | **Dr.Jiang:**  needs to give the feedback of analysis part | |
| 6(0722-0728) |  | |  | | --- | | Yijun needs to revise the paper based on Dr. Jiang’s feedback | | **Om:**  1.needs to revise the paper based on Dr. Jiang’s feedback  2.also needs to make the poster for the symposium | | Dr. Jiang could help Yijun and Om to revise the paper | |
| 7(0728-0804) |  | Polish and finalize the paper |
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| week | Tasks related to iMed |
| 1(0619-0625) | |  | | --- | | **Yijun:**  1.On AWS, create a new environment to deploy iMed | | **Om:**  1.register and log in on imed  2.try to share a dataset  3.try to share a model  (record all the problems you met and any change suggestions during the test) | |  | |
| 2(0625-0701) | |  | | --- | | **Yijun:** | | **Om:** | |  | |
| 3(0701-0707) | |  | | --- | | **Yijun**: | | **Om:** | | **Dr. Jiang:** | |
| 4(0708-0714) | |  | | --- | | **Yijun:** | | **Om:** | | **Dr.Jiang:** | |
| 5(0715-0721) | |  | | --- | | **Yijun:** | |  | | **Dr.Jiang:** | |
| 6(0722-0728) | |  | | --- | | **Yijun:** | | **Om:** | |  | |
| 7(0728-0804) |  |
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