ML & AI +Masters: Individual Assignment 2

Model Training and Evaluation

Building on the problem and dataset defined in the previous assignment, your next task is to apply the knowledge acquired to train, evaluate, and test models to solve your problem.

Start by selecting an appropriate model for your problem, considering factors like the type of data and the specific requirements of your task. You must experiment with the techniques you learn during the course (neural networks, classification or regression algorithms, hyperparameter tuning strategies, etc.) and pursue independent research to find suitable models for the task and data you have at hand.

Once you have selected your models, split your dataset into training, validation, and test sets to ensure robust evaluation. Train your models using the training set, fine-tune hyperparameters with the validation set, and finally, test the performance of your models on the test set.

Additionally, it is crucial to justify the approaches you choose for selecting your models and the techniques applied for evaluating and improving them. Explain why you selected specific algorithms and how they align with the characteristics of your dataset and problem. Discuss the rationale behind the preprocessing steps, parameter tuning, and any modifications made to the models.

Justifying your choices is important because it demonstrates a robust understanding of the machine learning principles you are learning during the course and ensures that your decisions are data-driven and methodologically coherent. This critical analysis will not only reinforce your learning but also provide a strong foundation for presenting your project findings.

Your goal is to iteratively improve your model's performance through experimentation and validation. By the end of this, you should have a well-trained and evaluated model that effectively addresses the problem you identified.

What to Submit:

- Extended Report from Assignment 1 including the following:
    - Model Selection
    - Model Training, Validation and Testing
    - Model Evaluation and Comparison
    - Conclusions
- Code Submission (Python Notebook or Script)