

Postgraduate applied Artificial Intelligence

Machine Learning coding assignment 1st term

Practical details

Submit only the Jupyter notebook on Canvas, by Monday January 27th 2025.

Indicate clearly each step with titles in markup. Provide sufficient explanations using comments so we can understand the code. Clean up the code before submitting and make it readable (for example, use meaningful variable names, etc.)

Assignment

In this assignment, you will develop a predictive model to estimate the required number of rental bikes at various times throughout a day based on weather conditions. Rental bikes play a key role in urban mobility, and predicting the demand for bikes can significantly reduce wait times for users and help cities maintain an adequate bike supply.

Download the dataset “SeoulBikeData.csv” from canvas. You can read the metadata in “SeoulBikeData_info.txt”.

The challenge is to predict the “Rented Bike Count”.

1. Define the problem, analyze the data, **prepare** the data for classification.
2. **Evaluate** different algorithms, **explore** model & training parameters.
3. **Investigate** the learning process critically (overfitting/underfitting)
4. **Improve** and present the obtained results. Be creative and substantiate your decisions.
5. Compare the results of the algorithms in step 2 with a **Neural Network**.
6. **Discuss**, interpret and summarize the obtained results and methodology.

You should focus on the task “evaluate different algorithms”. We do not want you to apply machine learning algorithms without reflection, but we want you to explore their characteristics, parameters, and evaluation (more than one metric).

Notes

Feel free to use any preprocessing, feature engineering step you deem necessary. You can combine different techniques, anything you wish, as long as you support your decisions. Feel free to propose, suggest and innovate!