Menoufia University
Faculty of Electronic Engineering
Computer Science and Engineering

Artificial Intelligence
Prepared by Amr Elshafey and Elhossiny Ibrahim
Reviewed by Ahmed Ghozia

A Glimpse of Machine Learning

1. Week one

a. Dataset reading, understanding, visualizing, and dividing.
b. Dataset preprocessing.

2. Week two

a. Meaning of learning, model validation, and evaluation.
b. Cross validation
c. Optimization.
d. Machine learning types (classification, regression, and clustering)
e. Regression : linear regression.

3. Week three

a. Classification: Logistic regression, KNN, Random Forest, Decision Tree.
b. clustering: K-means.

Assignment

Task1:

Wuzzuf jobs in Egypt data set at Kaggle
https://www.kaggle.com/omarhanyy/wuzzuf-jobs

Build all python needed classes to get the following from the Wuzzuf jobs in Egypt data set:

1. Read the dataset, convert it to DataFrame and display some from it.
2. Display structure and summary of the data.
3. Clean the data (null, duplications).
4. Count the jobs for each company and display that in order (What are the most demanding companies for jobs?).

5. Show step 4 in a pie chart.
6. Find out what are the most popular job titles.
7. Show step 6 in bar chart.
8. Find out the most popular areas?
9. Show step 8 in bar chart.
10. Print skills one by one , their count, and order the output to find out the most important skills required.

Task2:

1. Factorize the YearsExp feature and convert it to numbers in new col.
2. Apply K-means for job title and companies.

Task3:

Diabetes data set at Kaggle
https://www.kaggle.com/uciml/pima-indians-diabetes-database

1. Use the diabetes dataset to apply the classification algorithms: Decision Tree, Random Forest, KNN, and Logistic Regression.
2. Evaluate each algorithm and compare between all algorithms.
3. Finally discuss your conclusion about these algorithms with the dataset.

Deliverables:

1. Each student must share with us a GitHub link for a python application.
2. Each student must be ready to present his work.

Note : Tasks 1, 2 were prepared by Eng.Amr Elshafey , ITI Chairman assistant for training. https://www.linkedin.com/in/amrelshafey/