

Reflective essay

e-portfolio

As part of the Master's in Artificial Intelligence, since October 2024 I have been studying the module "Machine Learning". During this 12-week journey, I had the opportunity to gain new knowledge by reading books and articles, attending seminars, going through the additional resources provided by the instructor, and working independently or as member of a team to projects and assignments.

More specifically, during the first units of the module, I learnt about the 4th industrial revolution and its impact on our daily life. Through the collaborative discussion 1 "The 4th industrial revolution", I dived deep into these concepts and via the exchange of ideas with my colleagues I gained additional knowledge (evidence can be seen in my own portfolio).

In addition, during the first half of the module, I learned the process to follow in order to perform a regression analysis and clustering. During this part of the module, via the e-portfolio activities, the wiki activities, and the preparation activities for each seminar, I practiced already known Python libraries, such as Pandas, Numpy, Matplotlib, and learnt Scikit-Learn; a very powerful library especially when it comes to regression analysis. Apart from the material provided by the instructor and the practicing activities performed (see in the Artefacts section of my own portfolio), I studied the books of VanderPlas (2022), Mukhiya and Ahmed (2020), and Amr (2020) to enhance my theoretical understanding of machine learning as well as the use of libraries to perform relevant analyses. On top of that, during this first half of the module, I worked as members of a project development team. That activity required collaboration and coordination with other colleagues in order to develop a project for Airbnb company. As it was not my first time as member of a project team, I was able to transfer my experience to my fellows. Given my business background, my role in this project was to develop the business idea and create the business case, review the analysis performed, draft the final report, and analysing the business impact of the project. Working with colleagues from different countries,

with different time schedules, different academic and professional background, enhanced my collaborative and communication skills, and tested my flexibility in order to achieve the common goal. At the end, the outcome was successful and apart from developing a project for the purpose of this module, I came also closer to colleagues with whom we can exchange ideas, share concerns, and discuss our progress in the Master's degree.

During the second half of the module, more advanced algorithms were presented, such as Artificial Neural Networks (ANNs) and Convolutional Neural Networks (CNNs). During this part of the module via the e-portfolio activities, the wiki activities, and the preparation activities for each seminar, I learnt to use more advanced Python libraries, such as Keras and TensorFlow; such libraries are very useful and powerful especially when it comes to object recognition. Apart from the material provided by the instructor and the practicing activities performed (see in the Artefacts section of my own portfolio), I studied the book of Chollet (2021) to enhance my theoretical understanding of deep learning as well as the use of libraries to perform relevant object recognition analyses. On top of that, during this part of the module, I worked independently to develop a CNN for object recognition. This assignment required to use a database (CIFAR-10), develop, train, and evaluate the performance of a CNN model for image recognition, and deliver a Power Point presentation. This assignment helped me to enhance both my technical and presentation skills, as I first had to perform the relevant analysis in Python by applying several libraries and then deliver a presentation. The outcome of this assignment was successful as the relevant CNN was developed and the presentation was delivered within the set deadline (evidence can be seen in my own portfolio).

Finally, as part of the Collaborative Discussion 2 "Legal and Ethical views on ANN applications", I had the opportunity to exchange ideas and thoughts with my fellows regarding the use of AI writers focusing mainly on the relevant risks and what mitigating actions should be taken to reduce the likelihood and/or impact of these risks (evidence can be seen in my own portfolio).

To sum up, through articles, material provided by the instructor, and books I enhanced my theoretical knowledge of the concepts and through activities and assignments I practiced machine learning algorithms. As a result this module enhanced my communication, collaboration, organization, and technical skills and helped me understand better the concept of machine learning and its application on our daily life. Now, I can apply these algorithms in my profession where machine learning starts gaining ground, especially when it comes to forecasting and fraud prevention and detection.

References

Amr, T. (2020). *Hands-On Machine Learning with scikit-learn and Scientific Python Toolkits*. Packt Publishing.

Chollet, F. (2021). *Deep Learning with Python* . Manning Publications.

Mukhiya, S., & Ahmed, U. (2020). *Hands-On Exploratory Data Analysis with Python*. Packt Publishing.

VanderPlas, J. (2022). *Python Data Science handbook*. O'Reilly Media, Inc.