

CENG 461 ARTIFICIAL INTELLIGENCE HOMEWORK 3

In this assignments first part you will use PyTorch to train a neural network to predict residential electric vehicle charging loads using [real-world data](#) from apartment buildings in Norway. In particular, you will use input features like:

- plug-in duration
- whether the location is private/public
- the month
- the day of the week
- traffic density

to predict the actual charging load in kilowatt hours for a charging session. If it performs well, a model like this could be useful in predicting things like energy costs when developing EV charging infrastructure. You need to complete the first part of the assignment by implementing it as a jupyter notebook given in the *Build a Machine Learning Model Skill Path* course's **Predicting Electric Vehicle Charging Loads** project. After completing this part download the jupyter notebook (.ipynb) file and name it as CENG461_Homework3_Part1 for submission. In the second part of this assignment you will again use PyTorch and neural networks to predict hotel cancellations using [real-world hotel booking data](#) from resort hotel. The dataset contains many useful predictive input features such as:

- The data of booking
- length of stay
- the number of adults, children, and babies
- the average daily rates

Your task is to build and train two neural networks

1. A binary network to predict if a customer will cancel their booking or not
2. A multiclass network to predict if a customer will show up to their booking, cancel their booking ahead of time, or no-show

Training a well-performing model can provide immense value to a hotel company by helping to optimize revenue strategies, better allocate resources such as staff and amenities, or assist in marketing strategies to target high-risk customers with ads and promotions. You need to complete the second part of this assignment by implementing it as a jupyter notebook given in the *Build a Machine Learning Model Skill Path* course's **Predicting Hotel Booking Cancellations** project. After completing this part download the jupyter notebook (.ipynb) file and name it as CENG461_Homework3_Part2 for submission.

!!!!!!IMPORTANT

Assignment Rules:

1. In this homework, no cheating is allowed. If any cheating is detected, the homework will be graded as 0, and no further discussion will be entertained.
2. You are expected to submit your homework in groups. Therefore, it will be sufficient if only member of the group submits the homework.
3. You must send a single .zip file containing CENG461_Homework3_Part1.ipynb and CENG461_Homework3_Part2.ipynb notebook files.
4. The . file must be named in the following format: group number, course code, and homework number. Example: G01_CENG461_HW3.
5. Please be aware that if you do not follow the assignment rules regarding export format and naming conventions, you will lose points.