K. N. Toosi University of Technology

Faculty of Physics
Educational Group of
Atomic-Molecular and Astronomy

Special Topics I Final Projects
(Project 8 - UV Radiation on Mars)

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Overview

REMS[1] is a weather station on Mars provided by Finland and Spain. This meteorological station measures humidity, pressure, temperature, wind speed and ultraviolet radiations on Mars. We have prepared a dataset of the data collected by this weather station for you that it contains environmental factors. Now we ask you to use this dataset and build a model to classify the amount of UV radiations on Mars. You can download the dataset needed to answer this question from this link.[2] The information provided to you is as follows:

Columns	Description
Earth Date Time	Earth date time
Mars Date Time	Mars date time
Sol Number	days on Earth = sol on Mars
Max Ground Temp (°C)	maximum ground temperature on Mars
Min Ground Temp (°C)	minimum ground temperature on Mars
Max Air Temp (°C)	maximum air temperature on Mars
Min Air Temp (°C)	minimum air temperature on Mars
Mean Pressure (Pa)	mean pressure on Mars
Wind Speed (m/h)	wind speed on Mars
Humidity (%)	humidity percentage on Mars
Sunrise	sunrise time on Mars
Sunset	sunset time on Mars
UV Radiation	UV radiation amount on Mars
Weather	weather on Mars

Note: The given data is raw. To answer this question, you must first preprocess the data using the Pandas package.

Important Points

Be sure to

  - Leave appropriate comments for different parts of your code.

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[1] Rover Environmental Monitoring Station

[2] To save the dataset, you need to press Ctrl+S on the opened page and save the .csv file

- Completely explain about the algorithm(s) you use to answer this question.

- Use **model selection**, **feature engineering** and **feature scaling** in your code.

- Measure your model performance using model evaluation metrics and interpret the obtained result(s).

- If you used a specific book or article in your project, mention it in your notebook.

A part of your score will be allocated to these items.

* You should write all the steps of your project in the **Jupyter notebook** and upload it as a file with the **.ipynb** extension on the vc site.