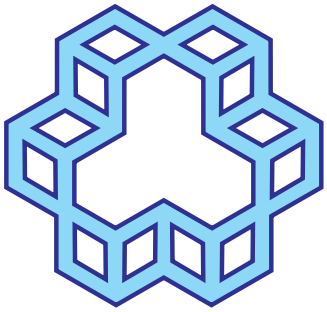

K. N. Toosi University of Technology

Faculty of Physics
Educational Group of
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Machine Learning Projects
(Project 6)

by
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(First Semester)

IPM Spacecraft

This is a fictitious story of the future and the data of this project is not real and is made only to learn more about machine learning.

The IPM spacecraft is a passenger spacecraft that began its first voyage in 2912 with about 13000 passengers to transport passengers from Earth to other habitable planets. As the spacecraft was en route to its first destination, it suddenly encountered a space-time anomaly. Although the spacecraft remained intact in this collision, almost half of its passengers were transported to another dimension!

In this project, you must predict which passengers were transported by the anomaly, using records recovered from the spacecraft's damaged computer system to rescue the crew and recover the missing passengers. You can download the dataset needed to answer this question from this link.[1] The information provided to us is as follows:

PassengerId An Id for each passenger. Each Id takes the form **gggg_pp** where **gggg** indicates a group the passenger is travelling with and **pp** is their number within the group. People in a group are often family members, but not always.

HomePlanet The planet the passenger departed from, typically their planet of permanent residence.

CryoSleep Indicates whether the passenger elected to be put into suspended animation for the duration of the voyage. Passengers in cryosleep are confined to their cabins.

Cabin The cabin number where the passenger is staying. Takes the form **deck/num/side**, where **side** can be either **P** for *Port* or **S** for *Starboard*.

Destination The planet the passenger will be debarking to.

Age The age of the passenger.

VIP Whether the passenger has paid for special VIP service during the voyage.

RoomService, FoodCourt, ShoppingMall, Spa, VRDeck Amount the passenger has billed at each of the Spacecraft IPM's many luxury amenities.

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

Name The first and last names of the passenger.

Transported Whether the passenger was transported to another dimension. This is the target, the column you are trying to predict.

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.
- Completely explain about the algorithm(s) you use to answer this question.
- Measure your model performance using model evaluation metrics and interpret the obtained result(s).

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.