Project : Hospital ICU

Part 1 :

Build a simulation model that represent the patient flow inside the ICU.

The ICU capacity is 15 beds. If all the beds are occupied, the patient can not enter the ICU and will be rejected.

Once a patient is in the ICU, a nurse is assigned to the specific patient.

After his stay in the ICU, the patient can either leave the system or can go back to the ICU.

All the data, such as the *arrival rate*, *the length of stay of patients*, the return rate …, **must be retrieve from the data set provided**.

* Each parameter must be the result on a data analysis from the data set and you should be able to explain it.
* Define the KPI’s you want to study from your model.
* Provide a 3D model.

Part 2 :

Build a predictive model to predict if a patient is either ready to leave the ICU or if he should stay.

The target is the attribute **bad**.

If bad = 0 and last = in, it means the patient stayed and should stay.

If bad = 1 and last = in, it means the patient stay and he should left.

If bad = 0 and last = last, it means the patient left and he should stay (or is dead).

If bad = 1 and last = in, it means the patient left and he should leave.

*If bad = 0 and last = last, it means the patient is Alive*

About the attribute, the SAPS is an estimation of the probability of mortality, Glasgow describe the extent of impaired consciousness, TISS quantify the amount of intensive care treatment needed, PA means blood pressure, FC means heart rate and gender = 1 is for male and gender = 0 for female.

Also, each patient has a unique CODE but can have different ID which represent several stay in the ICU.

* Start with a data analysis of the data set based on the KPI’s you’ve chosen.
* No recommendation for the data preprocessing and the models, it’s up to you.
* Do a threshold study.

At the end, you should provide a **professional** report on your work with all the explanations.

**Data extracted - Use this for the anylogic layout**

**This values are approximations with using the model. Thus, I shouldn’t be using.**

**Arrival date = 8.53 patients per day**

**Length of stay of patients = 7.37 days/ patient**

**Return rate of patients = To be calculated**

1. Check the csv with the principal parameters like the inflow of patients. (This is for the input)
2. The second part you have to use coding in python

Now that I ran the code, I can conclude the following because I could understand in more detail what we have to do:

1. Model to predict “bad” (I have to increase the precision for classification report)
2. Model to predict “last” (I have to increase the precision for classification report)
3. Once I got a & b, then I can get the dead or alive status