# MACHINE LEARNING
## FOR DECISION-MAKING IN PUBLIC POLICY

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## PROBLEM DESCRIPTION

Since the system of public policy is complex, there are a lot of sources of failure. The higher the level of decision making, the higher the influence. To make a correct decision, top-level managers must have not only experience and knowledge, but also tools that may facilitate their work.

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## OBJECTIVE & QUESTIONS

The objective of this work is to show that machine learning is a powerful and easy tool for analysing data and making decision. That is why the research questions of the term project are: "(a) does machine learning bring impact in policymaking?; and (b) how easy it is to dig into a dataset and find a point to make a decision?"

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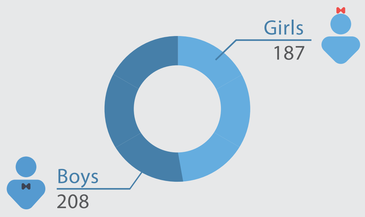
## CASE STUDY

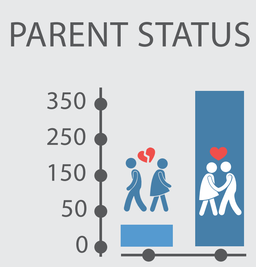
The data of student's performance was taken as an example. By analysing the dataset, it is not clear what the reasons are behind achieving a particular score in the course. There is a need for a more powerful tool that might identify a problematic group of students to reduce the risk of low performance.

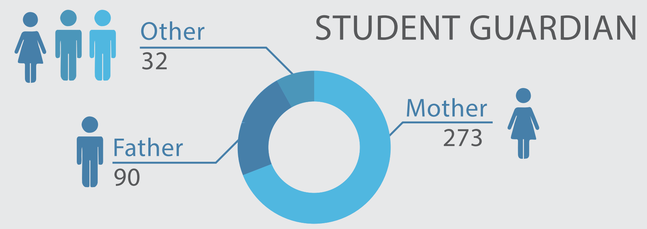
04

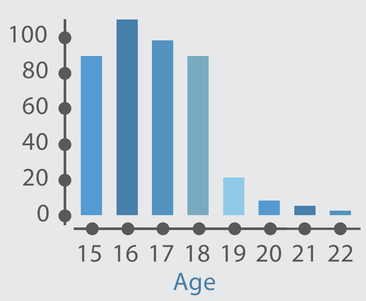
## DATA DESCRIPTION

```
C:
pd.value_counts(selected_column)
sns.countplot(x=selected_column, data)
```

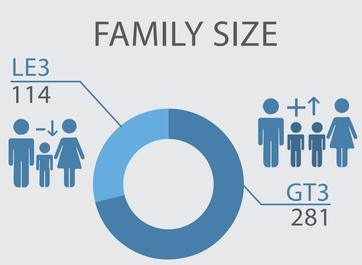


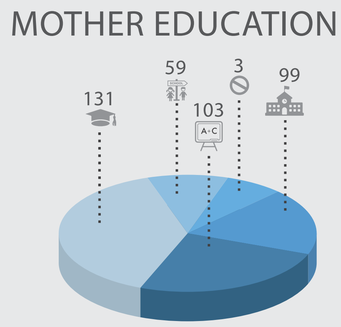



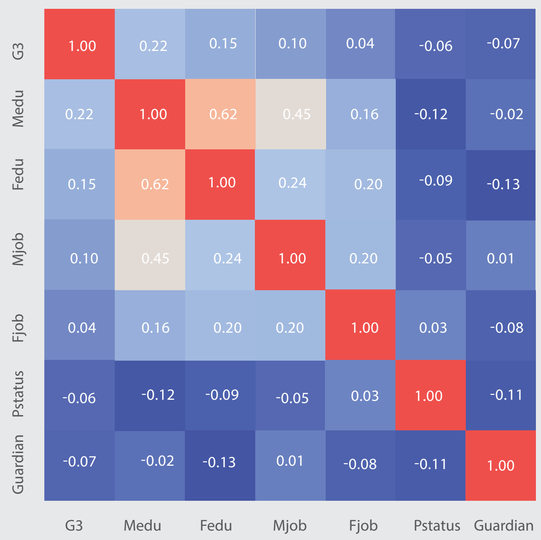







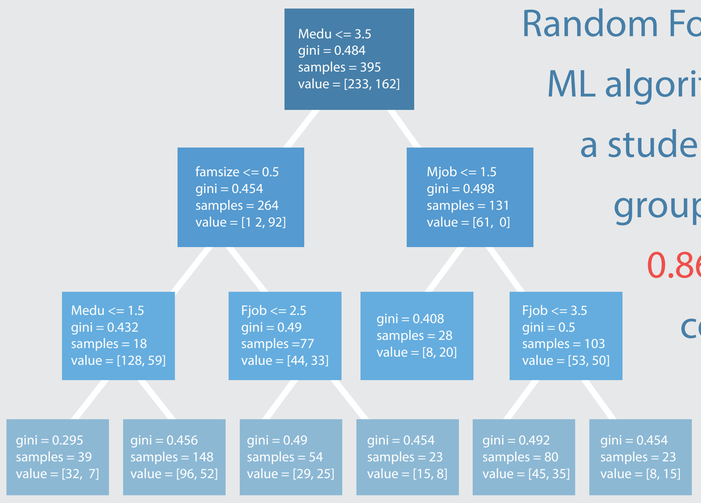




```
C:
plt.subplots(figsize=(20,15))
sns.heatmap(data.corr(), annot=True,fmt=".2f",
cmap="coolwarm")
```




```
C:
random_forest = RandomForestClassifier(n_estimators=100)
random_forest.fit(X_data, Y_passed)
```

05




Random Forest Estimation ML algorithm can identify a student from the risk group with accuracy 0.86%. The simple code might help to predict the problem and act in advance.

## PROPOSED SYSTEM

The system consists of two parts: 1) student's information data collection; 2) identification student in the risk. The system might help teachers to know a student who needs an extra assistant. Which may increase overall students' performance and save teachers' time. The system is easy to implement by using Python and ML library.

*Design Template source: Adobe Stock, UX by www.aigerimuz.com, GitHub: azamatuz/stud_perfomance*