Problem Definition

During the application period for master degree to universities I always used to first check tuition-fee, does it require GRE, what is the ranking of the university and etc. In this problem I decided to solve it with Decision Tree. Attributes and values are as provided below:

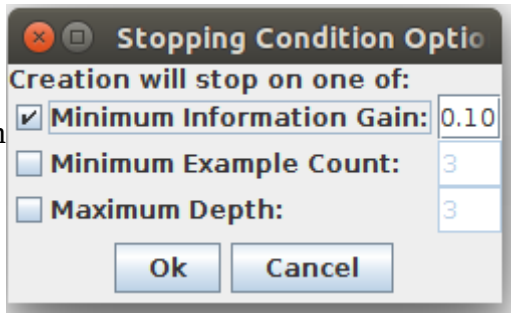
tuition=[0$,3000-5000$,10000-15000$]
scholarship=[full,partial,nothing]
ranking=[top10,top100,top300,above300]
GRE=[required,notrequired]
location=[USA,Europe,Asia]
appFee=[0$,50$,100$]
costOfLiving=[300$,500$,1000$]

I think attributes are self-explanotary by looking at this attributes I decide whether to apply or not.

I used 200 data for training my decision tree and 50 data to test it. How I used AISpace Decision Tree tool and the result that I get is provided below.

How I used AISpace Decision-Tree Tool.

After uploading the data("myinput") that I provided. From **Decision Tree Options** tab choose **Splitting Functions** and from there choose **Information Gain**, because as far as I remember in lecture, we gave more attention to Information Gain option.
Decision Tree Options → Splitting Functions → Information Gain



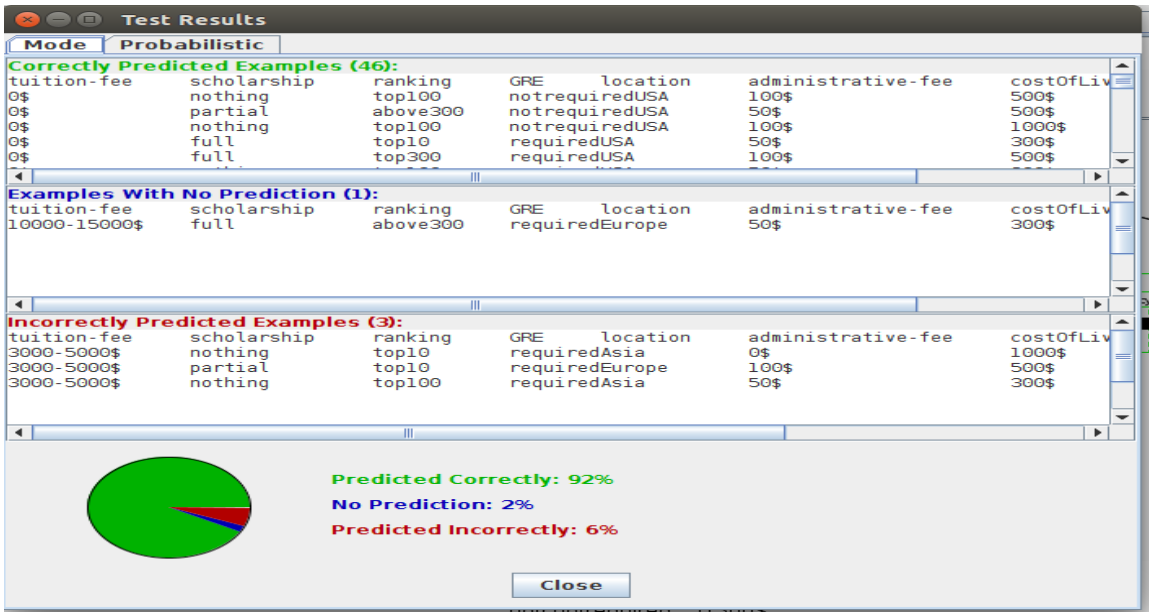
Also I set **Stopping Condition** to **Minimum Information Gain** and set it to **0.1**
Decision Tree Options → Stopping Condition → Minimum Information Gain

Then after clicking **Auto Create** it will automatically generate decision tree.

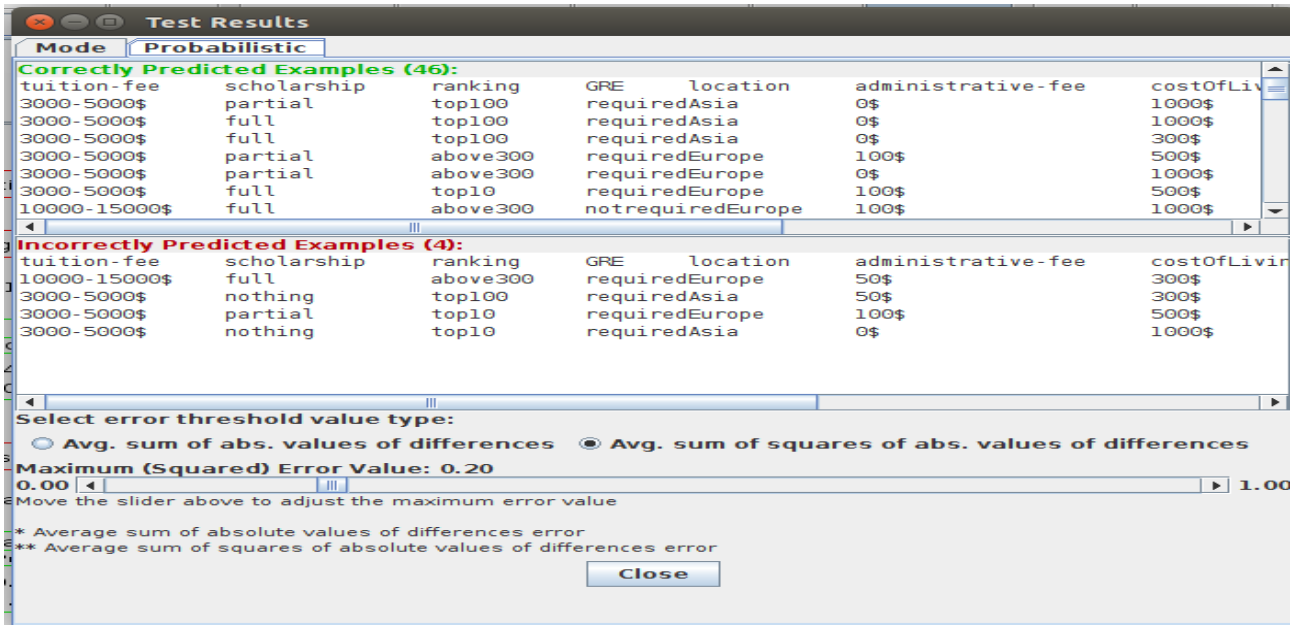
If you click on Test you will see how our decision tree performed on our test data.

In next page I provided the results that I got from testing our Decision-Tree.

Result obtained from Testing data



We can see here how much percentage of our data was correctly predicted, how much of it, was predicted wrong. Also there exist percentage of data that could not be predicted.
It is because there exist data, which does not match to any of our leaves. But decision tree can predict it with probabilities. It can say “with this much amount of probability answer maybe yes or no”. We can see result for probability case by clicking on **Probabilistic** tab.



As you can see here exist option to choose the type of error calculator, also by moving slider you can change amount of error that is acceptable for you. If you change slider, the number of unpredicted values may also change.