

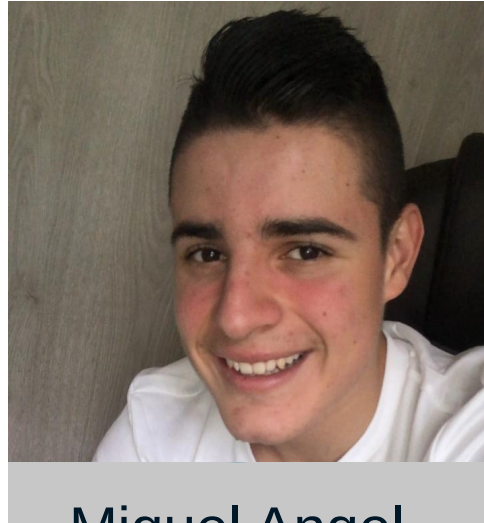
DECISION TREES IN ACADEMIC SUCCESS HIGH COLLEGE STANDARDIZED



Team Presentation



Santiago
Ochoa



Miguel Angel
Zapata



Miguel
Correa

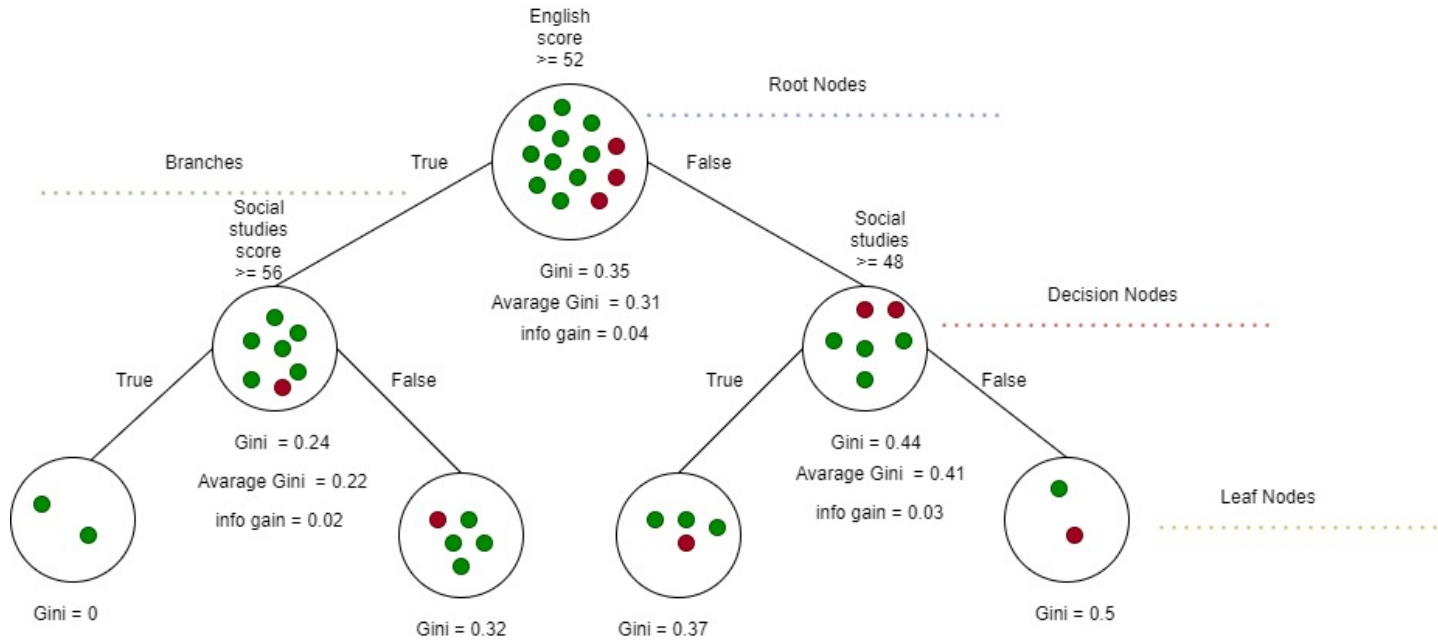


Mauricio
Toro



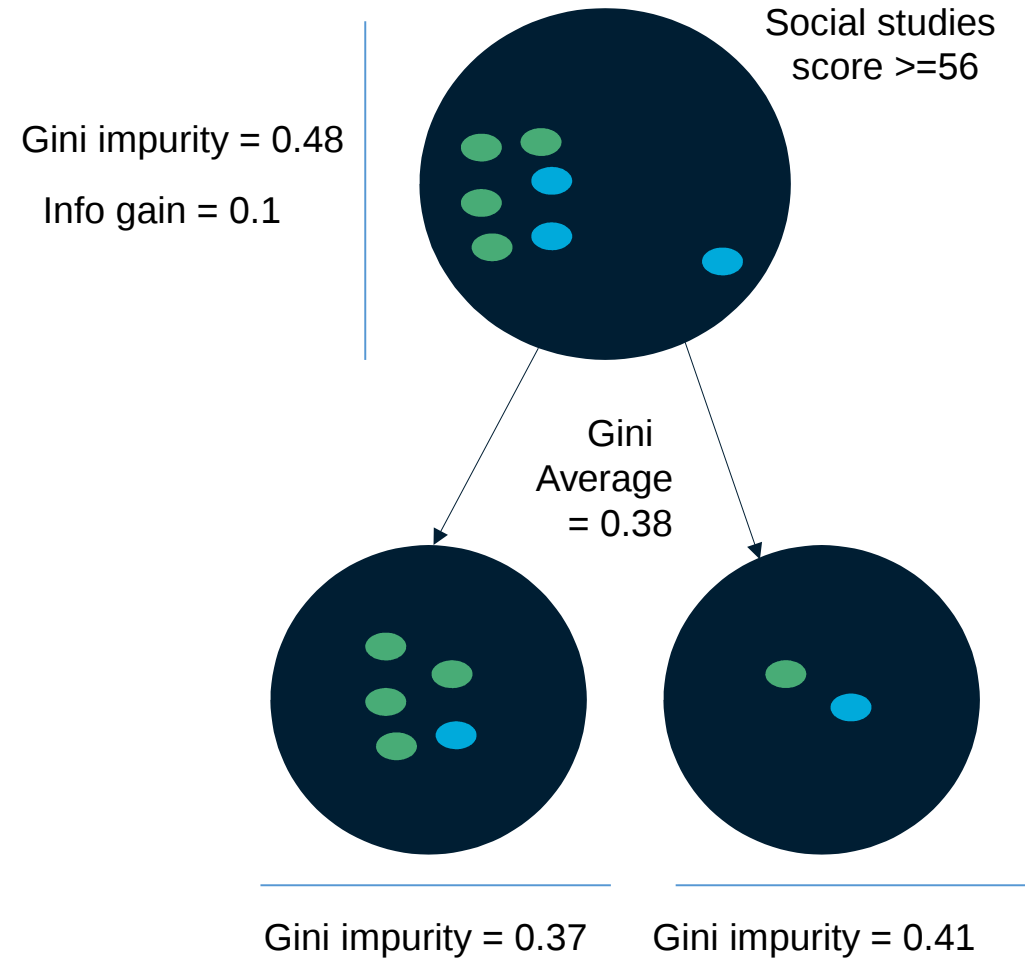
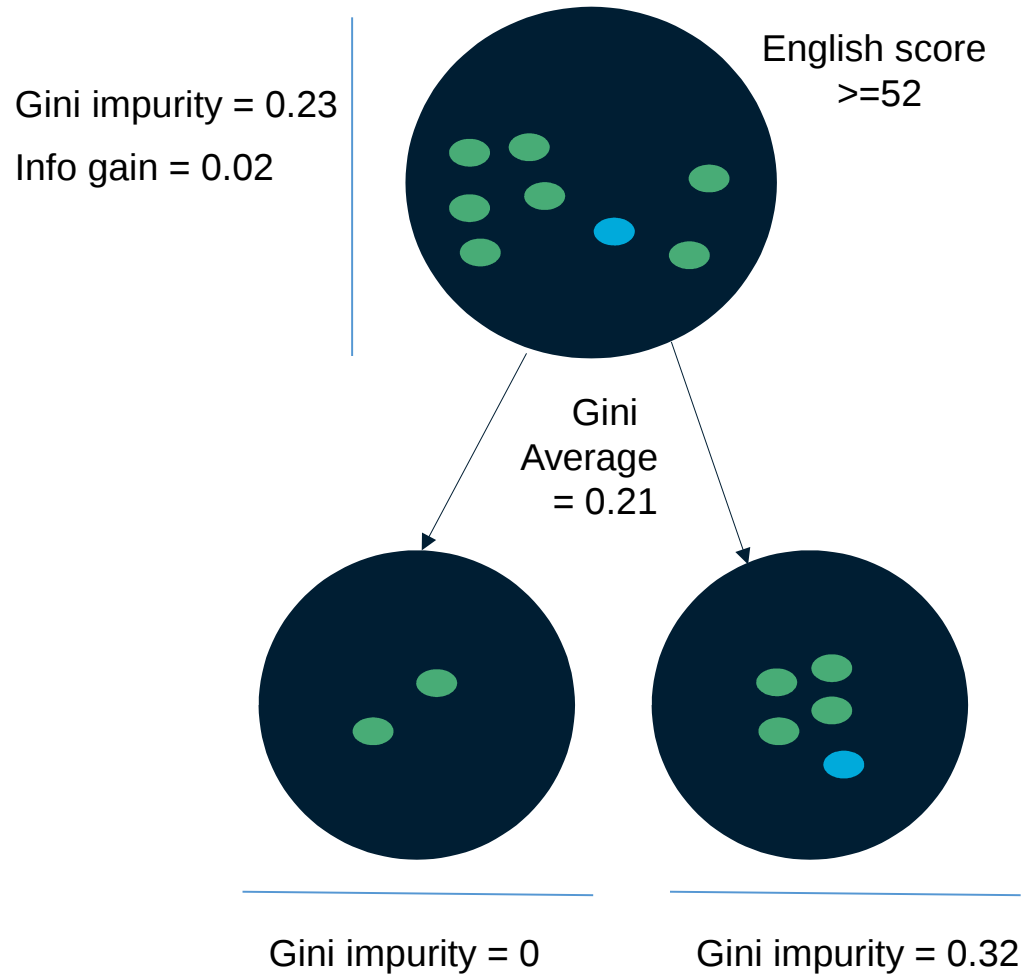
<https://github.com/sochoac1/ST0245002/tree/master/proyecto/proyecto/>





To build a binary tree the algorithm implemented was CART. In this example, we show a model to predict the academic success as the probability that a student must get a score above the average in the Saber pro.

Node Splitting

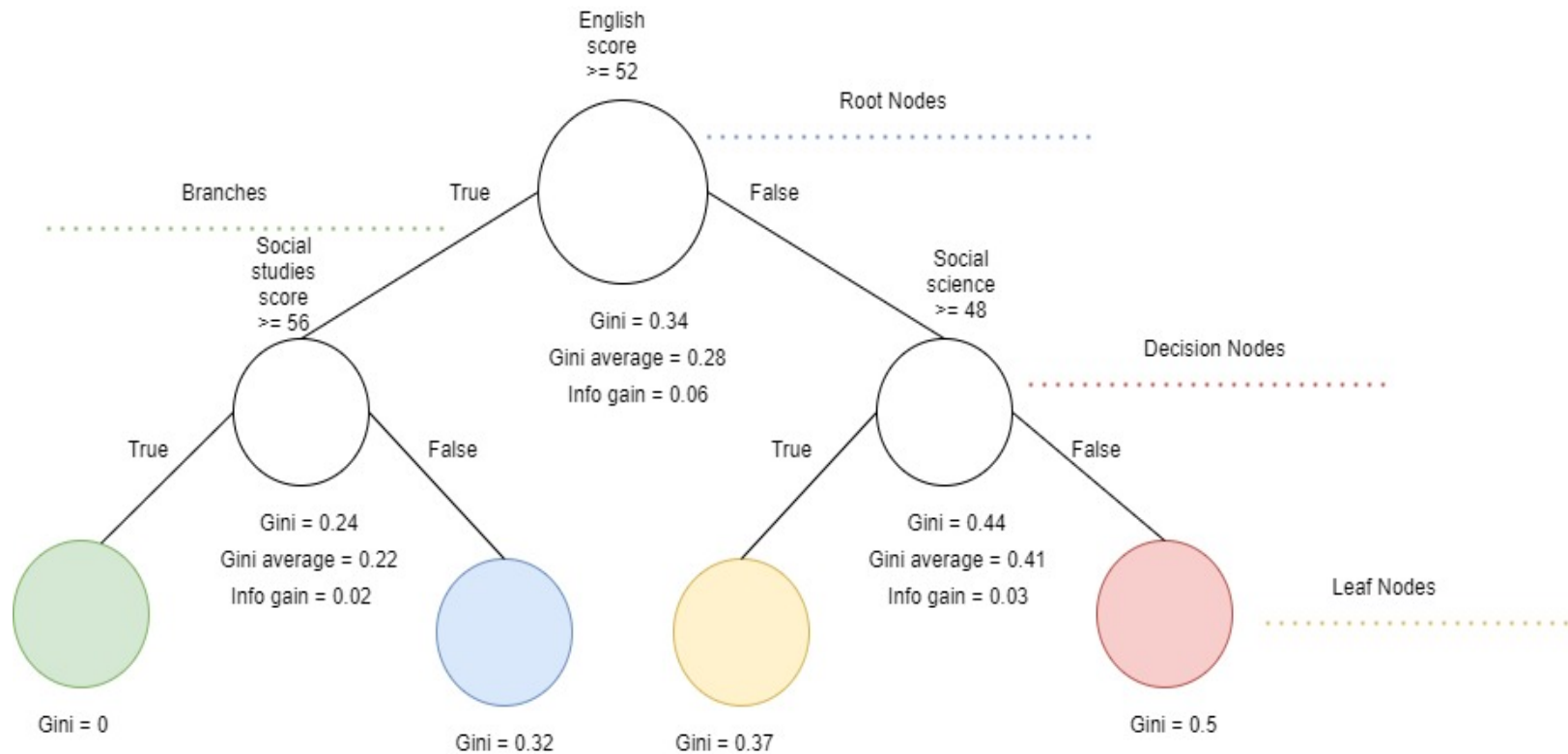


	Time Complexity	Memory Complexity
Training the model	$O(N^2 * M * 2^M)$	$O(N * M * 2^M)$
Testing the Model	$O(N * M)$	$O(1)$

The variable N represents the number of rows and M represents the number of columns of a matrix which contains the training dataset to build the tree.



Decision-Tree Model



Most Relevant Features



Social Studies



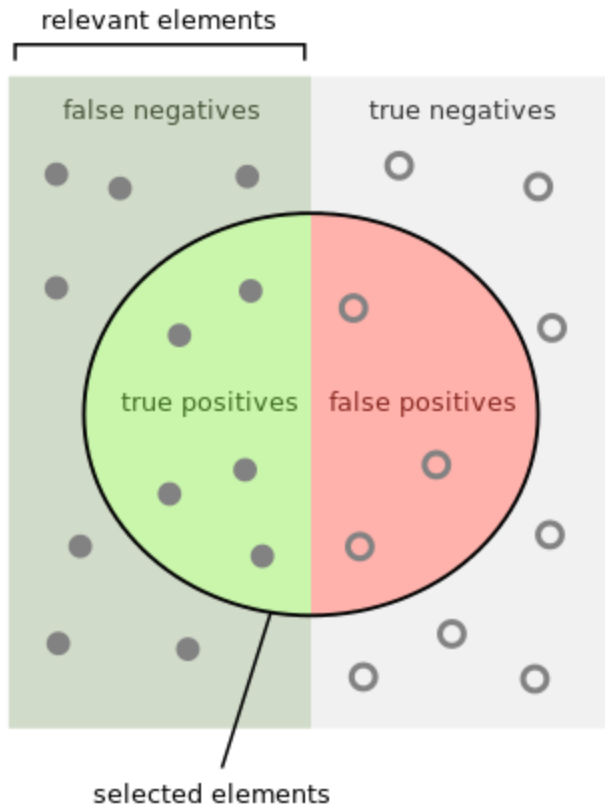
English



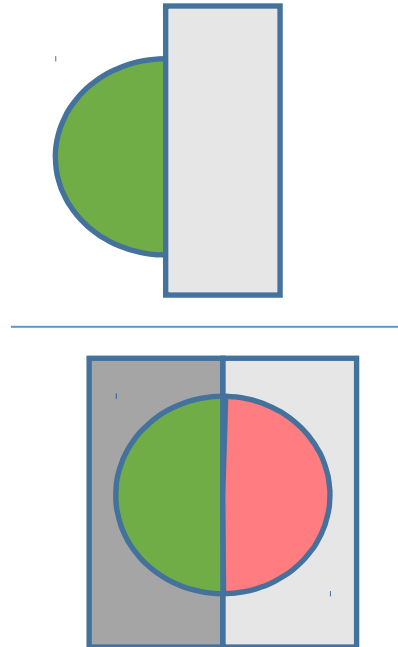
Science

A binary decision tree to predict Saber Pro scores based on the results of Saber 11. Green nodes represent those with a high probability of success, blue ones a medium probability, violet a probability between medium and low and the red ones a low probability of success.

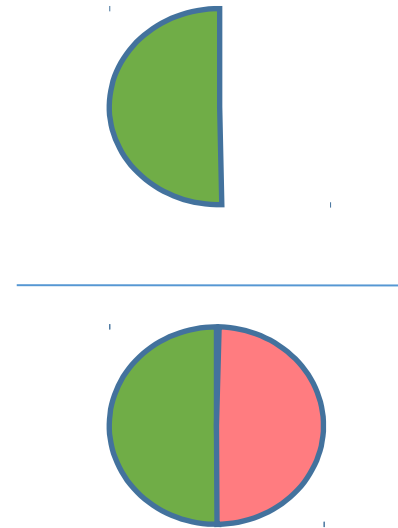
Evaluation Metrics



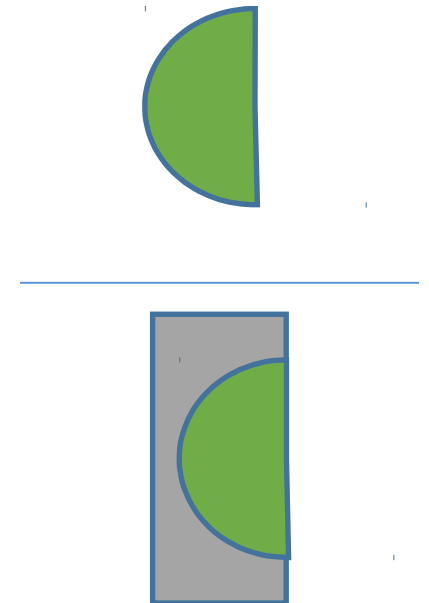
Accuracy



Precision



Recall



Evaluation Metrics

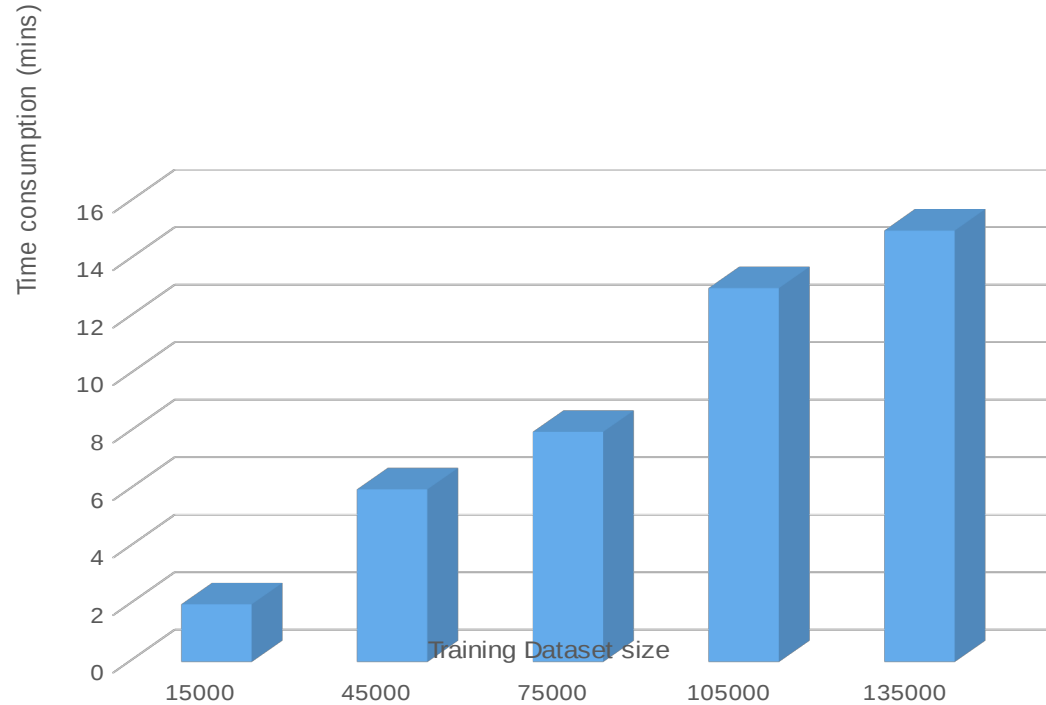


	Training data set	Testing data set
Accuracy	0.78	0.77
Precision	0.75	0.76
Recall	0.8	0.79

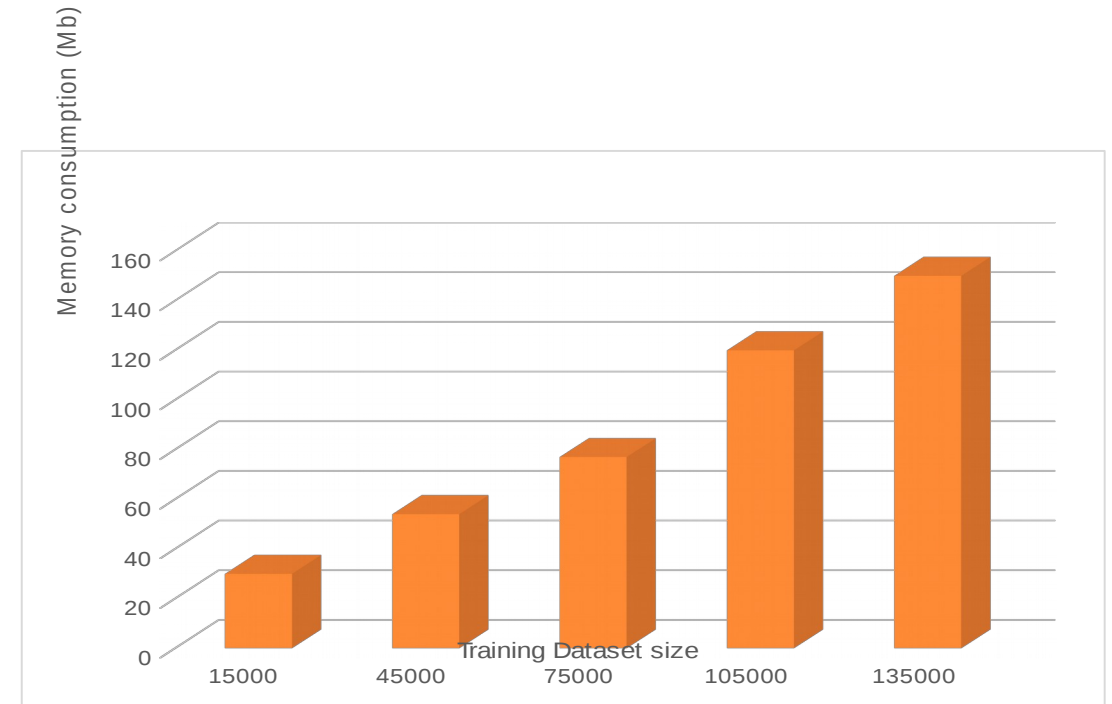
Evaluation metrics using a training dataset of 135,000 students and test dataset of 45,000 students.



Time and Memory Consumption



Time Consumption



Memory Consumption



THANK YOU!