USING PREDICTIVE MODELS TO DETERMINE JUDGE BIAS IN ASYLUM REFUGEE COURT CASES

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PROBLEM

The bias present in asylum court cases is a well known and well documented phenomenon. Our aim is to determine what features specifically tend to cause the most bias in these decisions. We look at features from as general as the nationality of the asylum seeker and the gender of the judge, to features as granular as the time of day the decision is made and whether or not the decision is written.

Additionally, we look at weather and sports games played on the day of the decision and twitter mood data in order to develop a hidden Markov model to be able to predict the mood of the judge at the time of the decision.

Using these features, we hope to develop a model that tells us that that a judge's decision is indeed biased. We also intend to determine the most important features that affect a Judge's decision.

METHOD

We begin by pre-processing all the sports and weather data to extract only the information that applies to the specific judge as well as the date on which the court case decision falls. We then use our data-set of twitter mood data as well as weather data to create a hidden Markov model in which the observable variables are the current state of the weather using a metric we define, and the hidden variables are the mood of the judge on the day the decision is made. We then use this mood to calculate the missing mood values for all other court case decisions.

Concurrently, we use the hometown, college town, and town of residence of the judge to parse through the sports data and extract teams that we believe are relevant to the judge. We then use the ratio of wins vs. total games played as a feature.

Finally, we take the sports and mood features as well as all other features extracted from the raw data and pass them into a classification algorithm. We use a decision tree as our baseline and to determine feature importance. Finally we optimize our classification using a GBM model.

DATA

There are four main types of data used:

- Court case data provided by Daniel L. Chen examining asylum court decisions across 426 immigration judges over a period of 42 years from 1971 to 2013.

- National Oceanic and Atmospheric Administration historical weather data over the same time period and across all cities in which asylum decisions were recorded.

- Twitter mood data calculated over the period of one year across eight different cities.

- Historical sports data across the four major sports leagues in the United States (NBA, MLB, NHL, NFL).

FEATURES

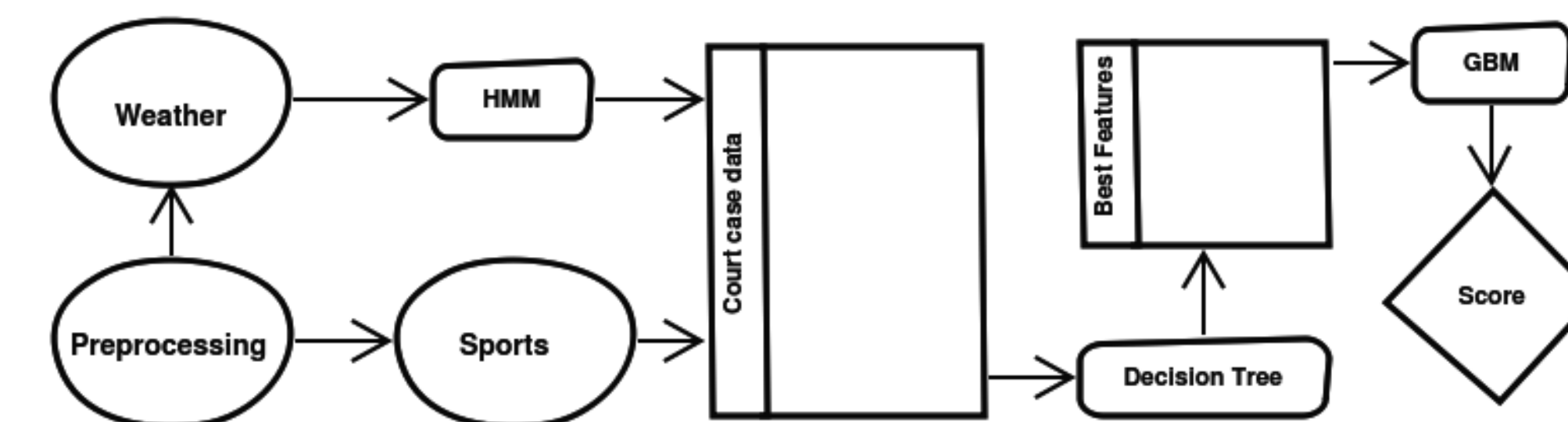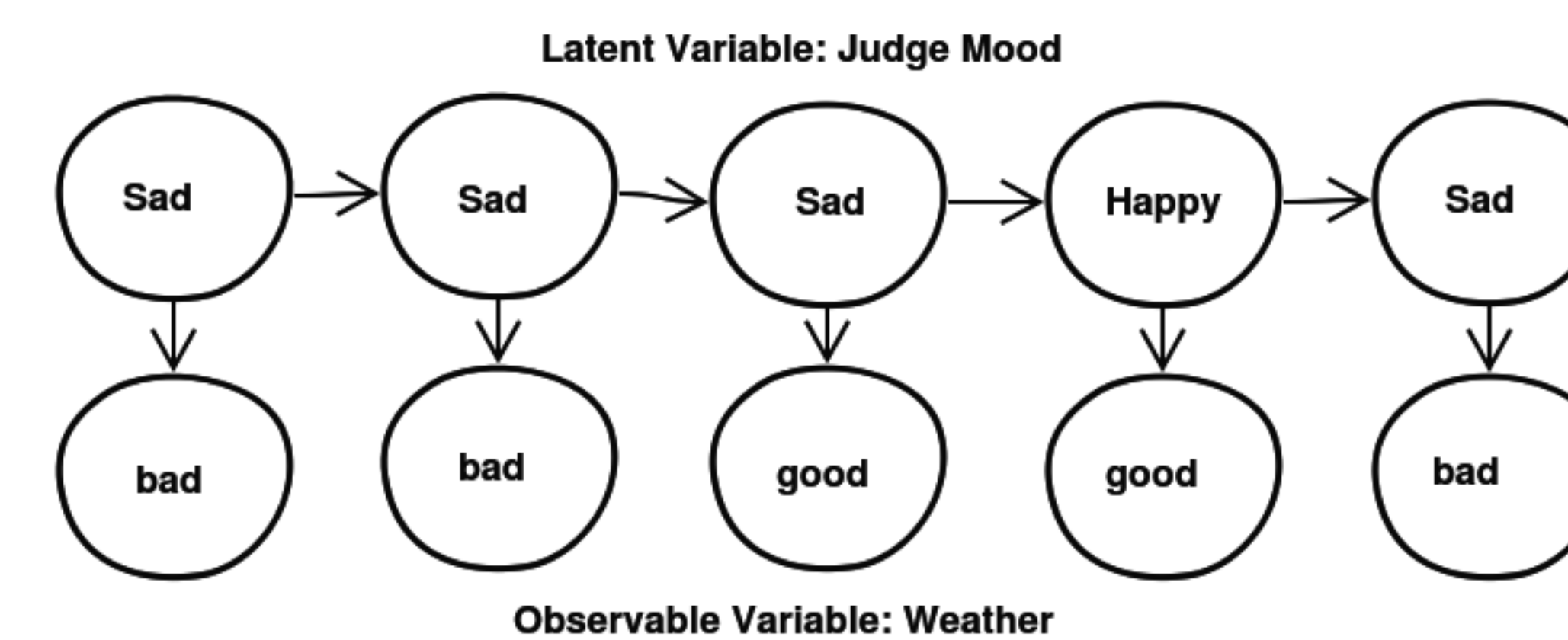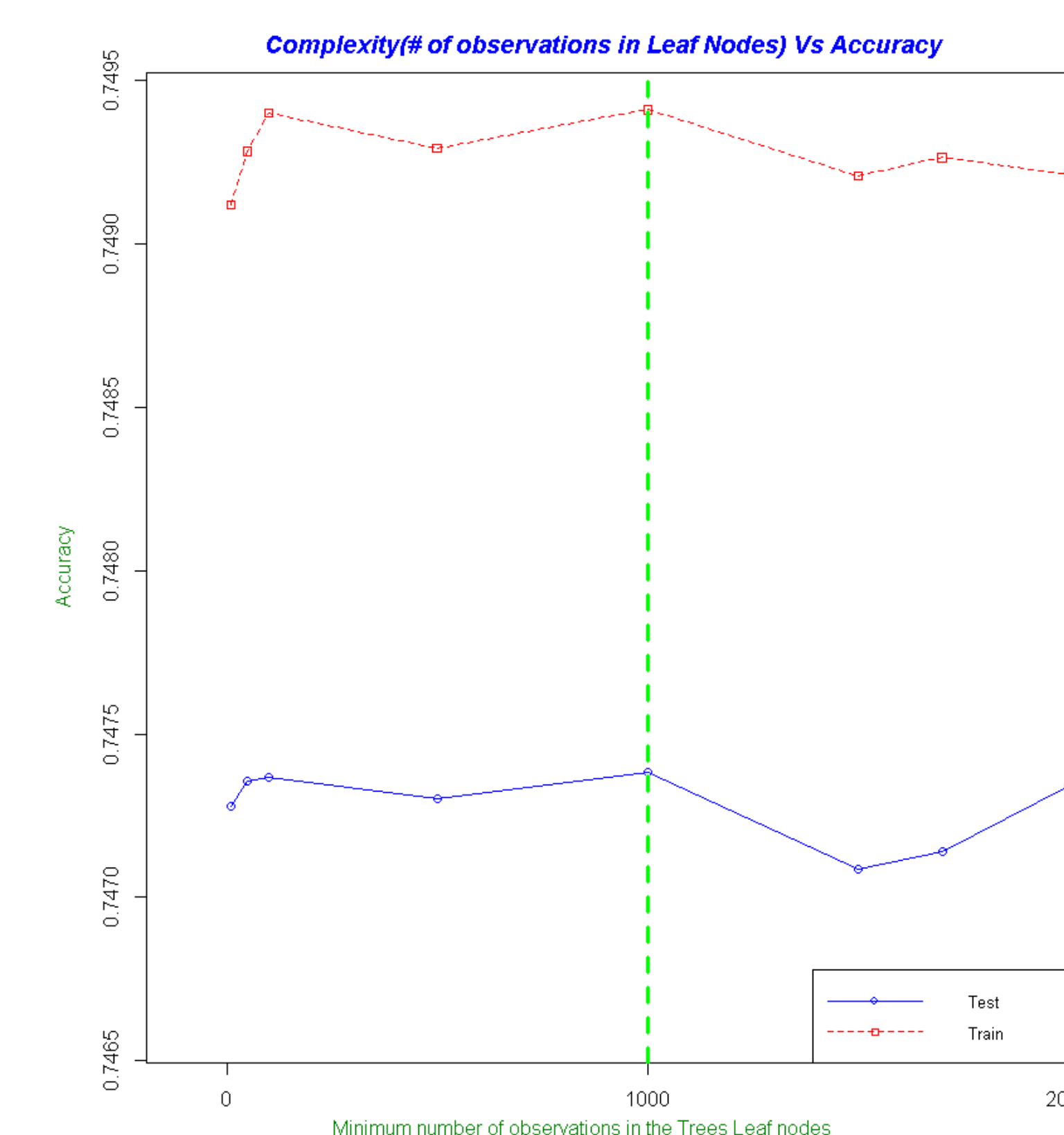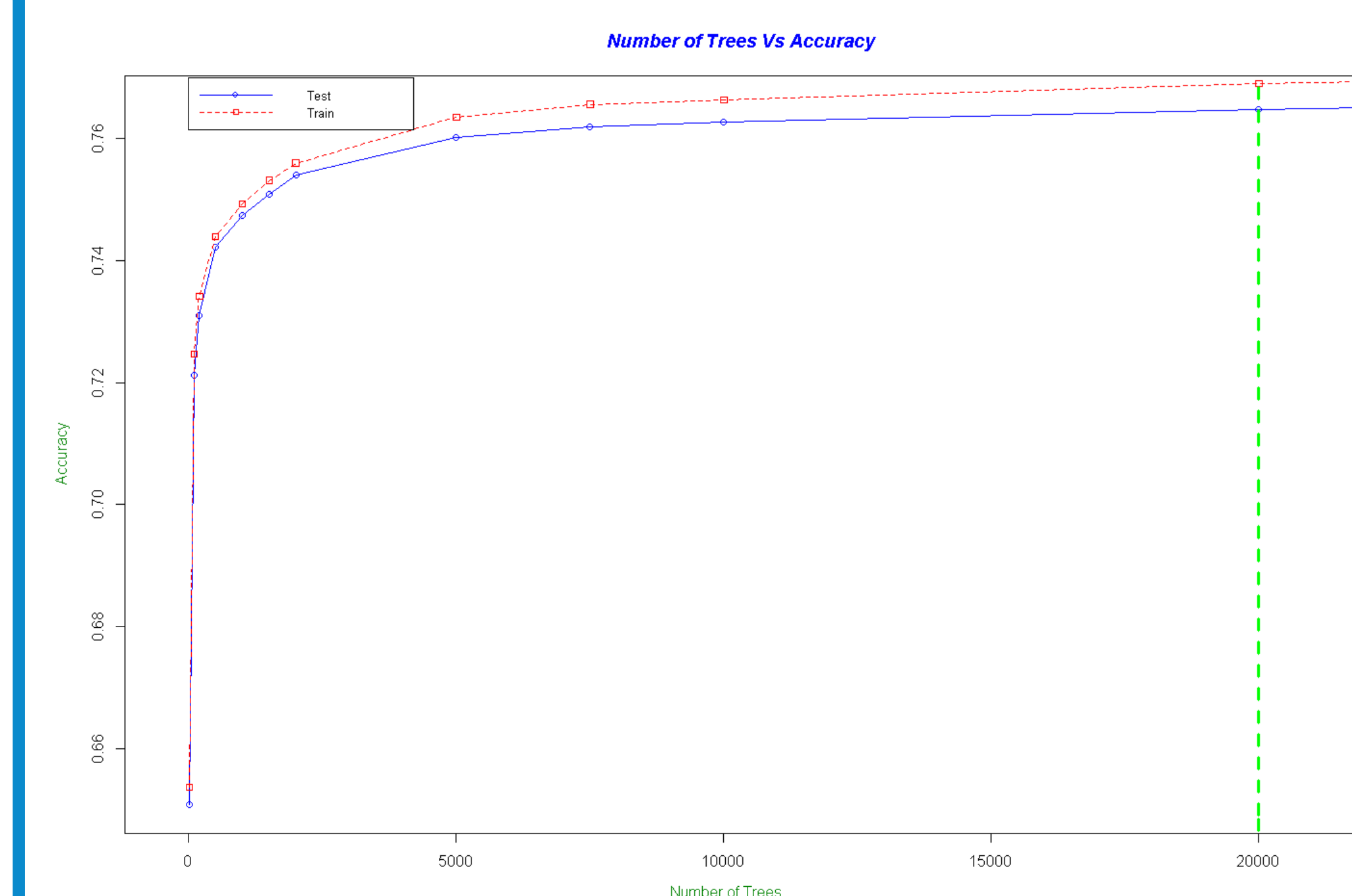The following is a description of some of the most important features:

numgrant_prev5: Number of grants in the judge's previous five decisions
bar: Where the Judge is licensed
natid: Nationality of the asylum
numcourtgrant_prev5: Number of grants that the court has made in the previous 5 decisions

Apart from these features, we also consider weather data and sports data. We process the sports and weather data to extract only the information that applies to each specific judge. We also use the twitter mood data-set as features.

MODEL TUNING

RESULTS

Most Important Features

Feature	Weight
numgrant_prev5	0.20142874
bar	0.13039
natid	0.110319
numcourtgrant_prev5	0.08797
natdefcode	0.0594
numcourtgrantother_prev5	0.05337
numcases_court_hearing	0.051319
lawyer	0.024951

Scores

Classifier	Score
GBM	78%
Decision Tree	60%
Random Forest*	35%

* Imputed the missing values.

REFERENCES

[1] "Refugee Roulette: Disparities in Asylum Adjudication" Stanford Law Review. Volume 60, Issue 2. Page 295

[2] Marouf, Fatma, "Implicit Bias and Immigration Courts" (2011). Scholarly Works. Paper 787. http://scholars.law.unlv.edu/facpub/787

A FUTURE DIRECTION

One direction we would like to take in the future is to look at other forms of mood data that are perhaps not related to twitter since we feel as though the mood of twitter could potentially not be indicative of the mood of immigration judges. Given more time, we would also like to increase the number of observable variables in the HMM to include sports data.