Peer-graded Assignment: Running a Random Forest

Objective: A random forest analysis was performed with a binary target variable (american dream). American dream was created based on survey results that was ranked from 0-10. Results >= 5 was categorized to have achieved their american dream (1) & <5 were categorized to not have achieved their american dream (0).

Syntax:

```
proc import datafile='/home/pragyaratnarai0/Course 4/ool_pds.csv' out = imported replace;

run;

DATA new; set imported;

if w2_qe3 GE 5 then

AmericanDream=1;

else

AmericanDream=0;

proc hpforest;

target americandream/level=nominal;

input w1_c1c w2_qe2 w1_p4 w1_p13 w1_p13a ppagect4 ppeducat

ppethm  ppgender PPINCIMP PPHOUSE /level=nominal;

RUN;
```

The HPFOREST Procedure

Performance Information

Execution Mode	Single-Machine
Number of Threads	2

Data Access Information

Data	Engine	Role	Path
WORK.NEW	V9	Input	On Client

Model Information

Parameter	Value	
Variables to Try	3	(Default)
Maximum Trees	100	(Default)
Inbag Fraction	0.6	(Default)
Prune Fraction	0	(Default)
Prune Threshold	0.1	(Default)
Leaf Fraction	0.00001	(Default)
Leaf Size Setting	1	(Default)
Leaf Size Used	1	
Category Bins	30	(Default)
Interval Bins	100	
Minimum Category Size	5	(Default)
Node Size	100000	(Default)
Maximum Depth	20	(Default)
Alpha	1	(Default)
Exhaustive	5000	(Default)
Rows of Sequence to Skip	5	(Default)
Split Criterion	.	Gini
Preselection Method	.	Loh
Missing Value Handling	.	Valid value

Number of Observations

Type	N
Number of Observations Read	2294
Number of Observations Used	2294

Baseline Fit Statistics

Statistic	Value
Average Square Error	0.249
Misclassification Rate	0.468
Log Loss	0.691

		Fit Statistics					
Number of Trees	Number of Leaves	Average Square Error (Train)	Average Square Error (OOB)	Misclassification Rate (Train)	Misclassification Rate (OOB)	Log Loss (Train)	Log Loss (OOB)
1	65	0.1353	0.162	0.197	0.240	0.484	0.628
2	135	0.1152	0.156	0.156	0.217	0.365	0.661
3	208	0.1061	0.145	0.142	0.199	0.339	0.692
4	267	0.1022	0.135	0.141	0.187	0.329	0.580
5	326	0.0998	0.130	0.142	0.177	0.322	0.484
6	414	0.0994	0.130	0.145	0.184	0.323	0.473
7	488	0.0982	0.125	0.145	0.179	0.319	0.431
8	569	0.0975	0.125	0.145	0.177	0.317	0.441
9	650	0.0981	0.126	0.139	0.182	0.322	0.435
10	702	0.0988	0.125	0.139	0.180	0.325	0.408
11	757	0.0994	0.124	0.139	0.176	0.327	0.398
12	844	0.1001	0.124	0.139	0.173	0.331	0.400
13	926	0.0995	0.124	0.137	0.171	0.328	0.398
14	996	0.0997	0.123	0.138	0.170	0.330	0.397
15	1060	0.0989	0.122	0.139	0.166	0.327	0.394
16	1123	0.0983	0.121	0.139	0.162	0.325	0.390
17	1187	0.0980	0.120	0.138	0.163	0.323	0.388
18	1248	0.0978	0.119	0.138	0.163	0.322	0.385
19	1310	0.0977	0.118	0.138	0.163	0.321	0.383
20	1395	0.0979	0.119	0.137	0.163	0.323	0.385
21	1477	0.0982	0.119	0.139	0.162	0.325	0.385
22	1551	0.0982	0.119	0.138	0.161	0.325	0.385
23	1628	0.0984	0.118	0.139	0.160	0.326	0.385
24	1690	0.0984	0.118	0.139	0.160	0.326	0.384
25	1758	0.0981	0.118	0.140	0.160	0.325	0.383
26	1839	0.0982	0.118	0.141	0.161	0.325	0.383
27	1891	0.0981	0.117	0.139	0.162	0.324	0.373
28	1959	0.0976	0.117	0.139	0.162	0.323	0.371
29	2023	0.0976	0.117	0.140	0.162	0.322	0.371
30	2088	0.0976	0.116	0.141	0.162	0.322	0.370