```
1  *----------------------------------------------------------
   -*
2  User:                u63457937
3  Date:                07 January 2024
4  Time:                10:26:14
5  *----------------------------------------------------------
   -*
6  * Training Output
7  *----------------------------------------------------------
   -*
8
9
10
11
12 Variable Summary
13
14          Measurement      Frequency
15 Role          Level          Count
16
17 ID        INTERVAL            1
18 ID        NOMINAL             1
19 INPUT     INTERVAL            4
20 INPUT     NOMINAL            12
21 TARGET    NOMINAL             1
22 TIMEID    INTERVAL            1
23
24
25
26
27 Model Events
28
29                                         Number
30                             Measurement    of
31     Target        Event      Level      Levels      O
   rder       Label
32
```

```
33  Subscription_Status    YES      NOMINAL        2        Des
    cending
34
35
36
37
38  Predicted and decision variables
39
40  Type                Variable                              Label
41
42  TARGET       Subscription_Status
43  PREDICTED    P_Subscription_StatusYes    Predicted: Subscrip
    tion_Status=Yes
44  RESIDUAL     R_Subscription_StatusYes    Residual: Subscript
    ion_Status=Yes
45  PREDICTED    P_Subscription_StatusNo     Predicted: Subscrip
    tion_Status=No
46  RESIDUAL     R_Subscription_StatusNo     Residual: Subscript
    ion_Status=No
47  FROM         F_Subscription_Status       From: Subscription_
    Status
48  INTO         I_Subscription_Status       Into: Subscription_
    Status
49
50
51
52
53
54  The HPFOREST Procedure
55
56       Performance Information
57
58  Execution Mode      Single-Machine
59  Number of Threads    2
60
61
```

```
62              Data Access Information
63
64  Data                 Engine    Role     Path
65
66  EMWS2.PART_TRAIN     V9        Input    On Client
67
68
69                      Model Information
70
71  Parameter                        Value
72
73  Variables to Try                     4     (Default)
74  Maximum Trees                      100
75  Actual Trees                       100
76  Inbag Fraction                     0.6
77  Prune Fraction                       0     (Default)
78  Prune Threshold                    0.1     (Default)
79  Leaf Fraction                  0.00001     (Default)
80  Leaf Size Setting                    1     (Default)
81  Leaf Size Used                       1
82  Category Bins                       30
83  Interval Bins                      100
84  Minimum Category Size                5
85  Node Size                       100000     (Default)
86  Maximum Depth                       50
87  Alpha                             0.05
88  Exhaustive                        5000
89  Rows of Sequence to Skip             5     (Default)
90  Split Criterion                      .     Gini
91  Preselection Method                  .     Loh
92  Missing Value Handling               .     Valid value
93
94
95           Number of Observations
96
97  Type                                 N
```

```
98
99 Number of Observations Read            1943
100 Number of Observations Used           1943
101
102
103        Baseline Fit Statistics
104
105 Statistic                       Value
106
107 Average Square Error            0.197
108 Misclassification Rate          0.270
109 Log Loss                        0.583
110
111
```

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	2	0.106	0.112	0.174	0.197	0.299	0.311
2	5	0.106	0.110	0.174	0.186	0.298	0.305
3	7	0.106	0.108	0.174	0.182	0.298	0.300
4	9	0.106	0.106	0.174	0.176	0.298	0.296
5	11	0.108	0.112	0.174	0.183	0.319	0.322
6	13	0.107	0.110				

0.174		0.178	0.315	0.317
125	7	15	0.107	0.109
0.174		0.176	0.312	0.315
126	8	17	0.107	0.108
0.174		0.177	0.310	0.312
127	9	19	0.107	0.108
0.174		0.177	0.309	0.311
128	10	21	0.106	0.108
0.174		0.175	0.308	0.309
129	11	26	0.106	0.108
0.174		0.176	0.307	0.308
130	12	28	0.106	0.107
0.174		0.175	0.306	0.308
131	13	30	0.106	0.107
0.174		0.175	0.305	0.307
132	14	32	0.106	0.107
0.174		0.175	0.305	0.306
133	15	37	0.106	0.107
0.174		0.175	0.304	0.306
134	16	40	0.105	0.106
0.174		0.175	0.302	0.304
135	17	43	0.105	0.107
0.174		0.175	0.302	0.304
136	18	45	0.106	0.107
0.174		0.177	0.307	0.309
137	19	50	0.106	0.107
0.174		0.177	0.307	0.309
138	20	53	0.106	0.107
0.174		0.176	0.306	0.308
139	21	56	0.106	0.107
0.174		0.176	0.306	0.308
140	22	60	0.105	0.107
0.174		0.176	0.305	0.307
141	23	63	0.105	0.107
0.174		0.175	0.304	0.307
142	24	68	0.105	0.107

0.174		0.173	0.303	0.306
143	25	71	0.105	0.106
0.174		0.173	0.302	0.305
144	26	74	0.105	0.106
0.174		0.174	0.302	0.305
145	27	76	0.105	0.106
0.174		0.174	0.302	0.305
146	28	78	0.105	0.106
0.174		0.174	0.302	0.305
147	29	80	0.105	0.106
0.174		0.174	0.301	0.304
148	30	83	0.105	0.106
0.174		0.174	0.301	0.304
149	31	86	0.105	0.106
0.174		0.174	0.301	0.304
150	32	88	0.105	0.106
0.174		0.174	0.301	0.304
151	33	90	0.105	0.106
0.174		0.174	0.301	0.304
152	34	92	0.105	0.106
0.174		0.174	0.301	0.303
153	35	94	0.105	0.106
0.174		0.174	0.301	0.303
154	36	97	0.105	0.106
0.174		0.174	0.301	0.303
155	37	100	0.105	0.106
0.174		0.174	0.300	0.303
156	38	102	0.105	0.106
0.174		0.174	0.300	0.303
157	39	104	0.105	0.106
0.174		0.174	0.300	0.303
158	40	107	0.105	0.106
0.174		0.174	0.300	0.303
159	41	109	0.105	0.106
0.174		0.174	0.300	0.303
160	42	116	0.105	0.106

0.174		0.174	0.299	0.302
161	43	120	0.105	0.106
0.174		0.174	0.299	0.302
162	44	122	0.105	0.106
0.174		0.174	0.299	0.302
163	45	124	0.105	0.106
0.174		0.174	0.299	0.302
164	46	126	0.105	0.106
0.174		0.174	0.299	0.302
165	47	129	0.104	0.106
0.174		0.174	0.299	0.302
166	48	131	0.105	0.106
0.174		0.174	0.301	0.304
167	49	134	0.105	0.106
0.174		0.174	0.301	0.303
168	50	136	0.105	0.106
0.174		0.174	0.301	0.303
169	51	138	0.105	0.106
0.174		0.174	0.300	0.303
170	52	140	0.105	0.106
0.174		0.174	0.300	0.303
171	53	142	0.105	0.106
0.174		0.174	0.300	0.303
172	54	144	0.105	0.106
0.174		0.174	0.300	0.303
173	55	147	0.105	0.106
0.174		0.174	0.300	0.303
174	56	149	0.105	0.106
0.174		0.174	0.300	0.303
175	57	151	0.105	0.106
0.174		0.174	0.300	0.303
176	58	153	0.105	0.106
0.174		0.174	0.300	0.303
177	59	156	0.105	0.106
0.174		0.174	0.300	0.302
178	60	158	0.105	0.106

```
       0.174                0.174     0.300      0.302
179            61      160   0.105      0.106
       0.174                0.174     0.300      0.302
180            62      164   0.105      0.106
       0.174                0.174     0.300      0.302
181            63      166   0.105      0.106
       0.174                0.174     0.301      0.304
182            64      168   0.105      0.106
       0.174                0.174     0.301      0.304
183            65      171   0.105      0.106
       0.174                0.174     0.301      0.304
184            66      173   0.105      0.106
       0.174                0.174     0.303      0.305
185            67      175   0.105      0.106
       0.174                0.174     0.303      0.305
186            68      178   0.105      0.106
       0.174                0.174     0.303      0.305
187            69      180   0.105      0.106
       0.174                0.174     0.303      0.305
188            70      182   0.105      0.106
       0.174                0.174     0.303      0.305
189            71      184   0.105      0.106
       0.174                0.174     0.302      0.305
190            72      186   0.105      0.106
       0.174                0.174     0.302      0.305
191            73      188   0.105      0.106
       0.174                0.174     0.302      0.305
192            74      193   0.105      0.106
       0.174                0.174     0.302      0.305
193            75      195   0.105      0.106
       0.174                0.174     0.302      0.305
194            76      197   0.105      0.106
       0.174                0.174     0.302      0.304
195            77      199   0.105      0.106
       0.174                0.174     0.303      0.306
196            78      203   0.105      0.107
```

197	79	207	0.105	0.107
0.174		0.174	0.305	0.308
198	80	209	0.105	0.107
0.174		0.174	0.306	0.309
199	81	212	0.105	0.107
0.174		0.174	0.306	0.309
200	82	214	0.105	0.107
0.174		0.174	0.306	0.308
201	83	219	0.105	0.107
0.174		0.174	0.306	0.308
202	84	222	0.105	0.107
0.174		0.174	0.307	0.309
203	85	224	0.105	0.107
0.174		0.174	0.306	0.309
204	86	226	0.105	0.107
0.174		0.174	0.306	0.309
205	87	228	0.105	0.107
0.174		0.174	0.306	0.309
206	88	230	0.105	0.107
0.174		0.174	0.306	0.309
207	89	233	0.105	0.107
0.174		0.174	0.306	0.309
208	90	235	0.105	0.107
0.174		0.174	0.306	0.309
209	91	237	0.105	0.107
0.174		0.174	0.306	0.308
210	92	239	0.105	0.107
0.174		0.174	0.306	0.308
211	93	243	0.105	0.107
0.174		0.174	0.306	0.309
212	94	245	0.105	0.107
0.174		0.174	0.307	0.310
213	95	247	0.105	0.107
0.174		0.174	0.307	0.310
214	96	250	0.105	0.107

```
       0.174                 0.174      0.308      0.310
215        97       252    0.105      0.107
       0.174                 0.174      0.308      0.310
216        98       257    0.105      0.107
       0.174                 0.174      0.307      0.310
217        99       259    0.105      0.107
       0.174                 0.174      0.307      0.310
218       100       261    0.105      0.107
       0.174                 0.174      0.307      0.310
219
220
```

Loss Reduction Variable Importance

Variable	Number of Rules	Gini	OOB Gini	Margin	OOB Margin
Promo_Code_Used	55	0.086732	0.08737	0.173463	0.17493
Discount_Applied	43	0.065630	0.06554	0.131259	0.13128
Gender	25	0.016143	0.01598	0.032285	0.03146
Color	0	0.000000	0.00000	0.000000	0.00000
Payment_Method	0	0.000000	0.00000	0.000000	0.00000
Season	0	0.000000	0.00000	0.000000	0.00000
Frequency_of_Purchases	0	0.000000	0.00000	0.000000	0.00000
Purchase_Amount__USD	1	0.000022	-0.00004	0.000044	-0.00002
Size	1	0.000035	-0.00005	0.000071	-0.00002

```
235  Category                      1    0.000030    -0.00007
         0.000060    -0.00002
236  Shipping_Type                 2    0.000082    -0.00008
         0.000164    -0.00001
237  IMP_Review_Rating             7    0.000113    -0.00009
         0.000226     0.00003
238  Item_Purchased                1    0.000085    -0.00012
         0.000171    -0.00006
239  Previous_Purchases            7    0.000129    -0.00023
         0.000258    -0.00010
240  Age                           9    0.000341    -0.00057
         0.000682    -0.00024
241  Location                      9    0.000871    -0.00085
         0.001743     0.00060
242
243
244            Procedure Task Timing
245
246  Task                  Seconds      Percent
247
248  Reading Data            0.00        3.31%
249  Training Forest         0.12       96.66%
250  Saving Model            0.00        0.02%
251
252
253
254
255
256  The ASTORE Procedure
257
258              Store Key
259
260  9512A6CD4C8B2072414DD8845EE361EE01FC25FD
261
262
263          Basic Information
```

```
264
265  Analytic Engine       hpforest
266  Time Created          07Jan2024:10:26:12
267
268
269                                    Input Variables
270
271
                        Format
272  Name                                Length    Role      Type
            RawType        Name
273
274  Age                                    8     Input     Interval
            Num
275  IMP_Review_Rating                      8     Input     Interval
            Num
276  Previous_Purchases                     8     Input     Interval
            Num
277  Purchase_Amount__USD                   8     Input     Interval
            Num
278  Category                              11     Input     Classificat
       ion    Character
279  Discount_Applied                       3     Input     Classificat
       ion    Character
280  Gender                                 4     Input     Classificat
       ion    Character
281  Item_Purchased                        10     Input     Classificat
       ion    Character
282  Location                              13     Input     Classificat
       ion    Character
283  Promo_Code_Used                        3     Input     Classificat
       ion    Character
284  Shipping_Type                         14     Input     Classificat
       ion    Character
285  Size                                   2     Input     Classificat
       ion    Character
```

```
286
287
288                              Output Variables
289
290  Name                            Length    Type          Lab
     el
291
292  P_Subscription_StatusYES             8    Num           Pre
     dicted: Subscription_Status=YES
293  P_Subscription_StatusNO              8    Num           Pre
     dicted: Subscription_Status=NO
294  I_Subscription_Status               32    Character     Int
     o: Subscription_Status
295  _WARN_                               4    Character     War
     nings
296
297
298  *------------------------------------------------------------
     -*
299  * Score Output
300  *------------------------------------------------------------
     -*
301
302
303
304  The HP4SCORE Procedure
305
306        Performance Information
307
308  Execution Mode       Single-Machine
309  Number of Threads     1
310
311
312              Data Access Information
313
314  Data                 Engine    Role     Path
```

```
315
316 WORK._SCORETRAIN      V9         Input     On Client
317 WORK._OUTTEMP         V9         Output    On Client
318
319
320          Number of Observations
321
322 Type                                      N
323
324 Number of Observations Read         1943
325 Number of Observations Used         1943
326 Sum of Frequencies Used             1943
327
328
329          Procedure Task Timing
330
331 Task               Seconds      Percent
332
333 Scoring Data         0.01      100.00%
334
335
336
337 The HP4SCORE Procedure
338
339       Performance Information
340
341 Execution Mode      Single-Machine
342 Number of Threads      1
343
344
345              Data Access Information
346
347 Data                      Engine     Role      Path
348
349 EMWS2.HPDMFOREST_TRAIN    V9         Input     On Client
350 WORK._OUTTEMP             V9         Output    On Client
```

```
351
352
353          Number of Observations
354
355 Type                                        N
356
357 Number of Observations Read          1943
358 Number of Observations Used          1943
359 Sum of Frequencies Used              1943
360
361
362          Procedure Task Timing
363
364 Task                Seconds      Percent
365
366 Scoring Data          0.01      100.00%
367
368
369
370 The HP4SCORE Procedure
371
372        Performance Information
373
374 Execution Mode       Single-Machine
375 Number of Threads      1
376
377
378              Data Access Information
379
380 Data                      Engine    Role       Path
381
382 EMWS2.HPDMFOREST_TEST     V9        Input      On Client
383 WORK._OUTTEMP             V9        Output     On Client
384
385
386          Number of Observations
```

```
387
388  Type                                          N
389
390  Number of Observations Read        1945
391  Number of Observations Used        1945
392  Sum of Frequencies Used            1945
393
394
395          Procedure Task Timing
396
397  Task               Seconds       Percent
398
399  Scoring Data         0.01        100.00%
400
401
402  *-------------------------------------------------------------
     -*
403  * Report Output
404  *-------------------------------------------------------------
     -*
405
406
407
408
409  Fit Statistics
410
411  Target=Subscription_Status Target Label=' '
412
413     Fit
414  Statistics    Statistics Label                      Train
        Test
415
416   _ASE_        Average Squared Error                  0.11
        0.10
417   _DIV_        Divisor for ASE                     3886.00
     3890.00
```

```
418  _MAX_        Maximum Absolute Error              0.60
        0.61
419  _NOBS_       Sum of Frequencies              1943.00
     1945.00
420  _RASE_       Root Average Squared Error         0.32
        0.31
421  _SSE_        Sum of Squared Errors            409.72
     376.47
422  _DISF_       Frequency of Classified Cases   1943.00
     1945.00
423  _MISC_       Misclassification Rate             0.17
        0.15
424  _WRONG_      Number of Wrong Classifications  339.00
      284.00
425
426
427
428
429  Classification Table
430
431  Data Role=TRAIN Target Variable=Subscription_Status Target L
     abel=' '
432
433                              Target      Outcome      Frequency
          Total
434  Target     Outcome     Percentage   Percentage      Count
       Percentage
435
436  NO          NO         100.000       76.110          1080
        55.5841
437  NO          YES         39.282       23.890           339
        17.4472
438  YES         YES         60.718      100.000           524
        26.9686
439
440
```

```
441
442
443 Event Classification Table
444
445 Data Role=TRAIN Target=Subscription_Status Target Label=' '
446
447    False          True           False          True
448 Negative       Negative        Positive       Positive
449
450    0            1080            339            524
451
452
453
454
455 Assessment Score Rankings
456
457 Data Role=TRAIN Target Variable=Subscription_Status Target L
    abel=' '
458
459
                                    Mean
460                              Cumulative        %        Cum
   ulative        Number of       Posterior
461 Depth        Gain       Lift       Lift        Response      % R
    esponse    Observations    Probability
462
463    5       198.911     2.98911      2.98911      80.6122      8
    0.6122          98             0.59874
464   10       196.641     2.94348      2.96641      79.3814      8
    0.0000          97             0.59253
465   15       184.450     2.59943      2.84450      70.1031      7
    6.7123          97             0.58927
466   20       169.760     2.25539      2.69760      60.8247      7
    2.7506          97             0.58621
467   25       158.646     2.14071      2.58646      57.7320      6
    9.7531          97             0.58349
```

468	30	149.321	2.02603	2.49321	54.6392	6
	7.2384		97		0.58097	
469	35	146.657	2.30805	2.46657	62.2449	6
	6.5198		98		0.57722	
470	40	134.491	1.49085	2.34491	40.2062	6
	3.2391		97		0.57267	
471	45	122.057	1.22326	2.22057	32.9897	5
	9.8857		97		0.50057	
472	50	99.897	0.00000	1.99897	0.0000	5
	3.9095		97		0.04285	
473	55	81.759	0.00000	1.81759	0.0000	4
	9.0178		97		0.04048	
474	60	66.638	0.00000	1.66638	0.0000	4
	4.9400		97		0.03871	
475	65	53.840	0.00000	1.53840	0.0000	4
	1.4885		97		0.03705	
476	70	42.763	0.00000	1.42763	0.0000	3
	8.5011		98		0.02884	
477	75	33.265	0.00000	1.33265	0.0000	3
	5.9396		97		0.00816	
478	80	24.952	0.00000	1.24952	0.0000	3
	3.6977		97		0.00666	
479	85	17.615	0.00000	1.17615	0.0000	3
	1.7191		97		0.00576	
480	90	11.092	0.00000	1.11092	0.0000	2
	9.9600		97		0.00499	
481	95	5.255	0.00000	1.05255	0.0000	2
	8.3857		97		0.00356	
482	100	0.000	0.00000	1.00000	0.0000	2
	6.9686		97		0.00222	

483

484

485

486

487 Assessment Score Distribution

488

```
489  Data Role=TRAIN Target Variable=Subscription_Status Target L
     abel=' '

490

491   Posterior       Number                          Mean
492  Probability        of        Number of       Posterior
493     Range         Events      Nonevents       Probability      Percent
     age

494

495   0.60-0.65          28            7          0.60223           1.80
     13
496   0.55-0.60         496          332          0.58235          42.61
     45
497   0.00-0.05           0         1080          0.02022          55.58
     41
```