Results

May 5, 2015

1 Tables of Friedman, Bonferroni-Dunn, Holm, Hochberg and Hommel Tests

Table 1: Average Rankings of the algorithms

Algorithm	Ranking
"bagging"	3.1985669200697524
"boosting"	1.4315515769823108
"lasso"	2.6851193902451476
"frbs"	2.684762112699938

Friedman statistic considering reduction performance (distributed according to chi-square with 3 degrees of freedom: 51327.67918425304.
P-value computed by Friedman Test: 0.0.

Iman and Davenport statistic considering reduction performance (distributed according to F-distribution with 3 and 151140 degrees of freedom: 25906.72910901185.
P-value computed by Iman and Daveport Test: 5.551115123125783E-16.

Table 2: Holm / Hochberg Table for $\alpha = 0.05$

i	algorithm	$z = (R_0 - R_i)/SE$	p	Holm/Hochberg/Hommel
3	"bagging"	217.23727159709904	0.0	0.016666666666666666
2	"lasso"	154.11391450588238	0.0	0.025
1	"frbs"	154.069990722522	0.0	0.05

Bonferroni-Dunn's procedure rejects those hypotheses that have a p-value $\leq 0.016666666666666666$.
Hochberg's procedure rejects those hypotheses that have a p-value ≤ 0.05.
Hommel's procedure rejects all hypotheses.

Table 3: Holm / Hochberg Table for $\alpha = 0.10$

i	algorithm	$z = (R_0 - R_i)/SE$	p	Holm/Hochberg/Hommel
3	"bagging"	217.23727159709904	0.0	0.03333333333333333
2	"lasso"	154.11391450588238	0.0	0.05
1	"frbs"	154.069990722522	0.0	0.1

Bonferroni-Dunn's procedure rejects those hypotheses that have a p-value ≤ 0.03333333333333333.
Hochberg's procedure rejects those hypotheses that have a p-value ≤ 0.1.
Hommel's procedure rejects all hypotheses.

Table 4: Adjusted p-values

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{Hoch}	p_{Homm}
1	"bagging"	0.0	0.0	0.0	0.0	0.0
2	"lasso"	0.0	0.0	0.0	0.0	0.0
3	"frbs"	0.0	0.0	0.0	0.0	0.0

Nemenyi's procedure rejects those hypotheses that have a p-value $\leq 0.008333333333333333$.
Holm's procedure rejects those hypotheses that have a p-value ≤ 0.05.
Shaffer's procedure rejects those hypotheses that have a p-value $\leq 0.008333333333333333$.
Bergmann's procedure rejects these hypotheses:

- "bagging" vs. "boosting"

Table 5: Holm / Shaffer Table for $\alpha = 0.05$

i	algorithms	$z = (R_0 - R_i)/SE$	p	Holm	Shaffer
6	"bagging" vs. "boosting"	217.23727159709904	0.0	0.008333333333333333	0.008333333333333333
5	"boosting" vs. "lasso"	154.11391450588238	0.0	0.01	0.016666666666666666
4	"boosting" vs. "frbs"	154.069990722522	0.0	0.0125	0.016666666666666666
3	"bagging" vs. "frbs"	63.167280874577045	0.0	0.016666666666666666	0.016666666666666666
2	"bagging" vs. "lasso"	63.123357091216654	0.0	0.025	0.025
1	"lasso" vs. "frbs"	0.043923783360386805	0.9649651572131228	0.05	0.05

- "bagging" vs. "lasso"
- "bagging" vs. "frbs"
- "boosting" vs. "lasso"
- "boosting" vs. "frbs"

Table 6: Holm / Shaffer Table for $\alpha = 0.10$

i	algorithms	$z = (R_0 - R_i)/SE$	p	Holm	Shaffer
6	"bagging" vs. "boosting"	217.23727159709904	0.0	0.016666666666666666	0.016666666666666666
5	"boosting" vs. "lasso"	154.11391450588238	0.0	0.02	0.03333333333333333
4	"boosting" vs. "frbs"	154.069990722522	0.0	0.025	0.03333333333333333
3	"bagging" vs. "frbs"	63.167280874577045	0.0	0.03333333333333333	0.03333333333333333
2	"bagging" vs. "lasso"	63.123357091216654	0.0	0.05	0.05
1	"lasso" vs. "frbs"	0.043923783360386805	0.9649651572131228	0.1	0.1

Nemenyi's procedure rejects those hypotheses that have a p-value $\leq 0.016666666666666666$.
Holm's procedure rejects those hypotheses that have a p-value ≤ 0.1.
Shaffer's procedure rejects those hypotheses that have a p-value $\leq 0.016666666666666666$.
Bergmann's procedure rejects these hypotheses:

- "bagging" vs. "boosting"
- "bagging" vs. "lasso"

- "bagging" vs. "frbs"
- "boosting" vs. "lasso"
- "boosting" vs. "frbs"

Table 7: Adjusted p-values

i	hypothesis	unadjusted p	p_{Neme}	p_{Holm}	p_{Shaf}	p_{Berg}
1	"bagging" vs ."boosting"	0.0	0.0	0.0	0.0	4.9E-324
2	"boosting" vs ."lasso"	0.0	0.0	0.0	0.0	4.9E-324
3	"boosting" vs ."frbs"	0.0	0.0	0.0	0.0	4.9E-324
4	"bagging" vs ."frbs"	0.0	0.0	0.0	0.0	4.9E-324
5	"bagging" vs ."lasso"	0.0	0.0	0.0	0.0	4.9E-324
6	"lasso" vs ."frbs"	0.9649651572131228	5.789790943278737	0.9649651572131228	0.9649651572131228	0.9649651572131228