Supplementary Materials for

Performance Reproducibility Index for Classification

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- **Model**: Unequal Covariance Matrices with Correlated Features
- **Results for**: Reproducibility Index
- **Sample Size**: \( n = 120 \)
- **Multiple Data Sets**: \( m = 5 \)
Feature size $d = 1$

$\rho = 0.0005$

Figure 1: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.
**Feature size** $d = 1$

$\rho = 0.01$

Figure 2: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.
Feature size $d = 1$

$\rho = 0.05$

Figure 3: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.
Feature size $d = 1$

$\rho = 0.1$

Figure 4: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.
Feature size $d = 2$

$\rho = 0.0005$

Figure 5: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.
**Feature size** \( d = 2 \)

\( \rho = 0.01 \)

Figure 6: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.
Feature size $d = 2$

$\rho = 0.05$

Figure 7: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.
Feature size $d = 2$

$\rho = 0.1$

Figure 8: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.
Feature size $d = 5$

$\rho = 0.0005$

Figure 9: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.
**Feature size** $d = 5$

$\rho = 0.01$

Figure 10: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.
Feature size $d = 5$

$\rho = 0.05$

Figure 11: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.
Feature size $d = 5$

$\rho = 0.1$

Figure 12: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.
Feature size \( d = 10 \)

\( \rho = 0.0005 \)

Figure 13: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.
Feature size $d = 10$

$\rho = 0.01$

Figure 14: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.
Feature size $d = 10$

$\rho = 0.05$

Figure 15: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.
Feature size \( d = 10 \)

\( \rho = 0.1 \)

Figure 16: (a) LDA and 0.632 bootstrap; (b) LDA and 5F-CV; (c) LDA and LOO; (d) L-SVM and 0.632 bootstrap; (e) L-SVM and 5F-CV; (f) L-SVM and LOO; (g) RBF-SVM and 0.632 bootstrap; (h) RBF-SVM and 5F-CV; (i) RBF-SVM and LOO.