Bootstrap aggregated sparse FPCA for classification

Hyunsung Kim

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Department of Statistics
Chung-Ang University

Simulation

- *Probability-enhanced effective dimension reduction for classifying sparse functional data*(Yao *et al.*)
- 700 curves are generated with 200 training set and 500 test set.
- Bagged classifers are obtained from 100 bootstrap resamples.
- We consider the following 2 cases.
  - Dense
  - Sparse

Sparse Simulation Results

Table 1: The average classification error with standard error in percentage from 100 Monte Carlo repetitions for sparse data (Model II)

Method	Logistic Regression	SVM (Linear)	SVM (Gaussian)	LDA	QDA	Naive Bayes
Single	16.7 (2.33)	16.8 (2.20)	17.5 (2.76)	16.6 (2.30)	17.8 (2.56)	18.4 (2.66)
Majority vote	15.6 (1.95)	15.9 (1.87)	16.2 (2.28)	15.8 (1.96)	16.5 (2.14)	17.3 (2.42)
OOB weight	16.0 (2.02)	16.2 (1.94)	16.6 (2.28)	16.1 (1.98)	16.9 (2.09)	17.7 (2.43)

Sparse Simulation Results

Table 2: The average classification error with standard error in percentage from 100 Monte Carlo repetitions for sparse data (Model IV)

Method	Logistic Regression	SVM (Linear)	SVM (Gaussian)	LDA	QDA	Naive Bayes
Single	12.8 (2.41)	12.8 (2.40)	13.3 (2.65)	12.8 (2.40)	13.8 (2.56)	14.8 (2.74)
Majority vote	11.2 (1.84)	11.1 (1.89)	11.5 (1.98)	11.2 (1.85)	11.9 (2.03)	13.3 (2.36)
OOB weight	11.6 (1.86)	11.5 (1.90)	12.0 (1.96)	11.6 (1.86)	12.3 (2.06)	13.6 (2.35)