Predictive Analytics: Facial Emotion Recognition

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Current Practice

GBM → **GBM w/ Shrinkage**

Constructing training features: **.791s**
Constructing testing features: **.167s**

Training Model: **805.146s**
Testing Model: **15.143s**

Incorporating a shrinkage parameter of 0.1 increased our base model's accuracy to ~43%

Models Explored

Xgboost

- designed to be faster and more accurate than other implementations of gradient boosting
- uses second order derivative of loss function, rather than first

Training Model: **483.013s**

Model Accuracy: 50.2%

Training Model: **140s**

Model Accuracy: 53.67%

Bagging-Log

- used logistic regression and then bootstrap aggregation to reduce variance and avoid overfitting

Bagging-SVM

- used svm and then bootstrap aggregation to reduce variance and avoid overfitting

Training Model: **110s**

Model Accuracy: 52.56%

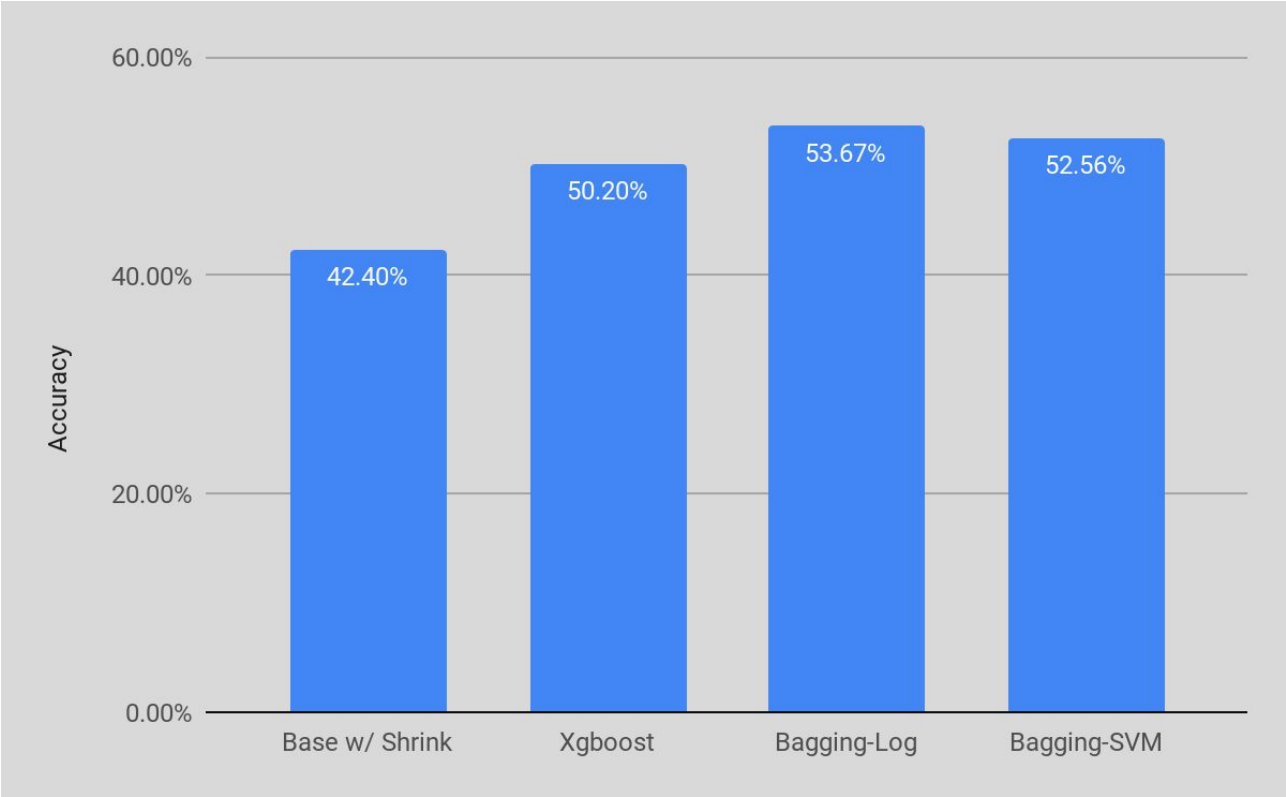
Bagging-SVM Model

1. Feature Extraction
2. Principal Component Analysis
3. SVM with Bagging

We used PCA, SVM, and Bagging for our final advanced model.

Improvements

Performance



Running Time