Linear Discriminant Analysis (LDA) Classifier Report

Project: Multi-Class Classification of Personality Types (MBTI)

1. Executive Summary

The Linear Discriminant Analysis (LDA) Classifier was trained to predict 16 MBTI personality types based on 60 survey questions. LDA finds linear combinations of features that best separate classes.

2. Model Configuration

Data Split:

- Training: 70% (42,023 samples)
- Validation: 15% (8,976 samples)
- Test: 15% (9,000 samples)

Hyperparameters:

- Algorithm: Linear Discriminant Analysis
- Solver: SVD (Singular Value Decomposition)
- Feature Scaling: StandardScaler
- Discriminant Components: 15 (min of n_classes-1, n_features)

3. Performance Metrics

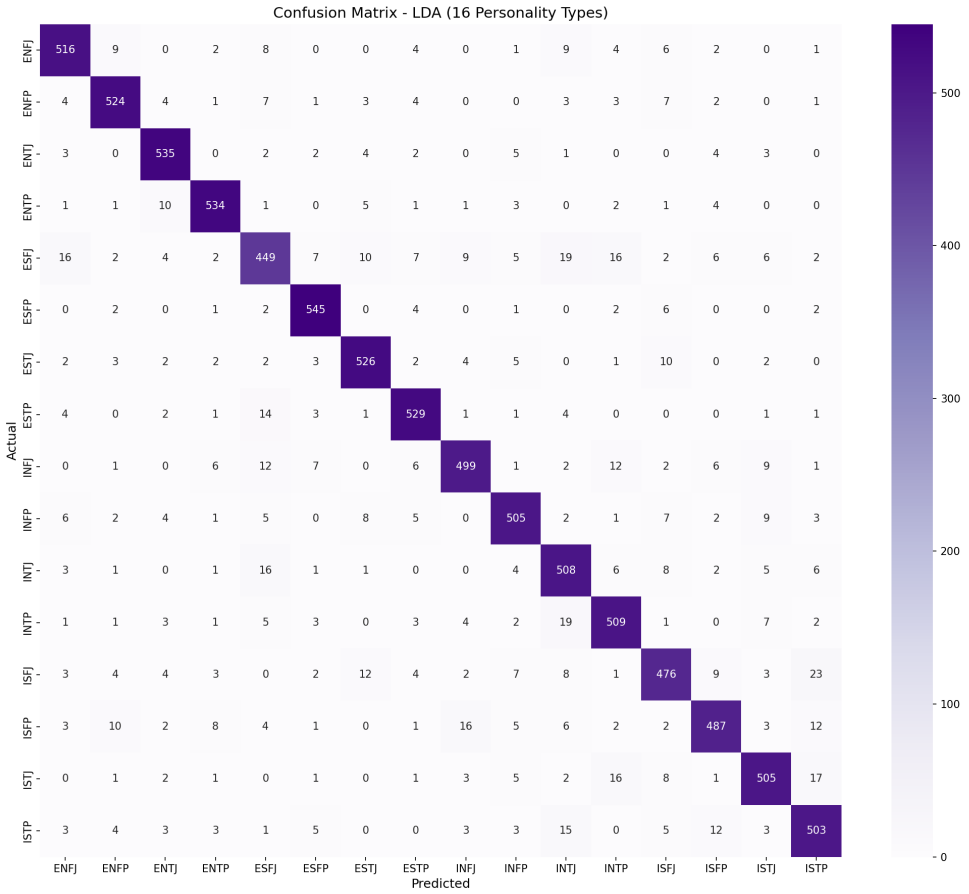
Measure	Score	Notes
Test Accuracy	90.56%	Overall classification accuracy
Validation Accuracy	90.63%	Validation set performance
Train Accuracy	90.53%	Training set performance
Top-3 Accuracy	98.14%	Correct type in top 3 predictions
Macro F1-Score	TBD	Balanced across all 16 classes

4. Visualizations

4.1 Confusion Matrix

Linear Discriminant Analysis (LDA) Classifier Report

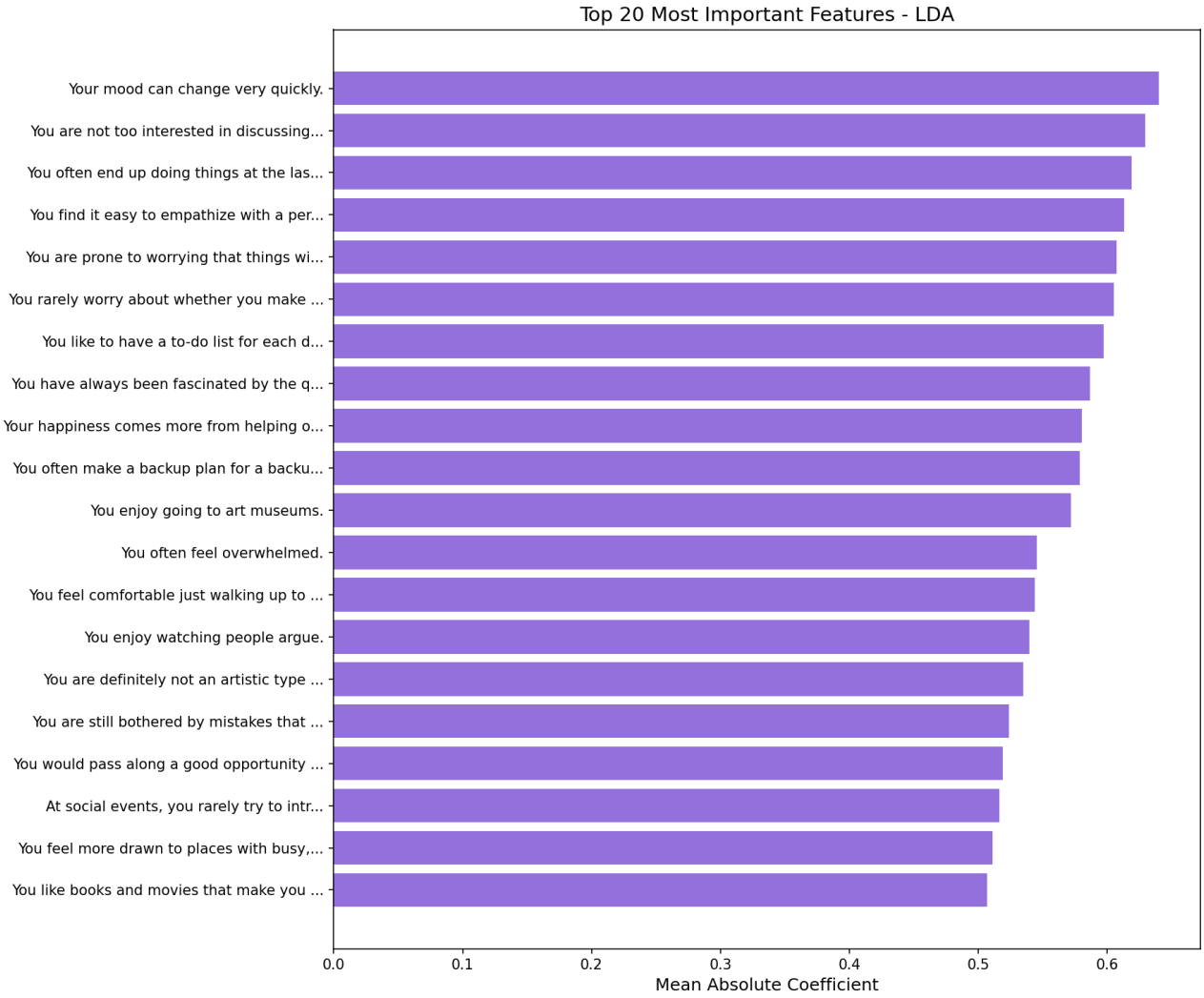
Project: Multi-Class Classification of Personality Types (MBTI)



Linear Discriminant Analysis (LDA) Classifier Report

Project: Multi-Class Classification of Personality Types (MBTI)

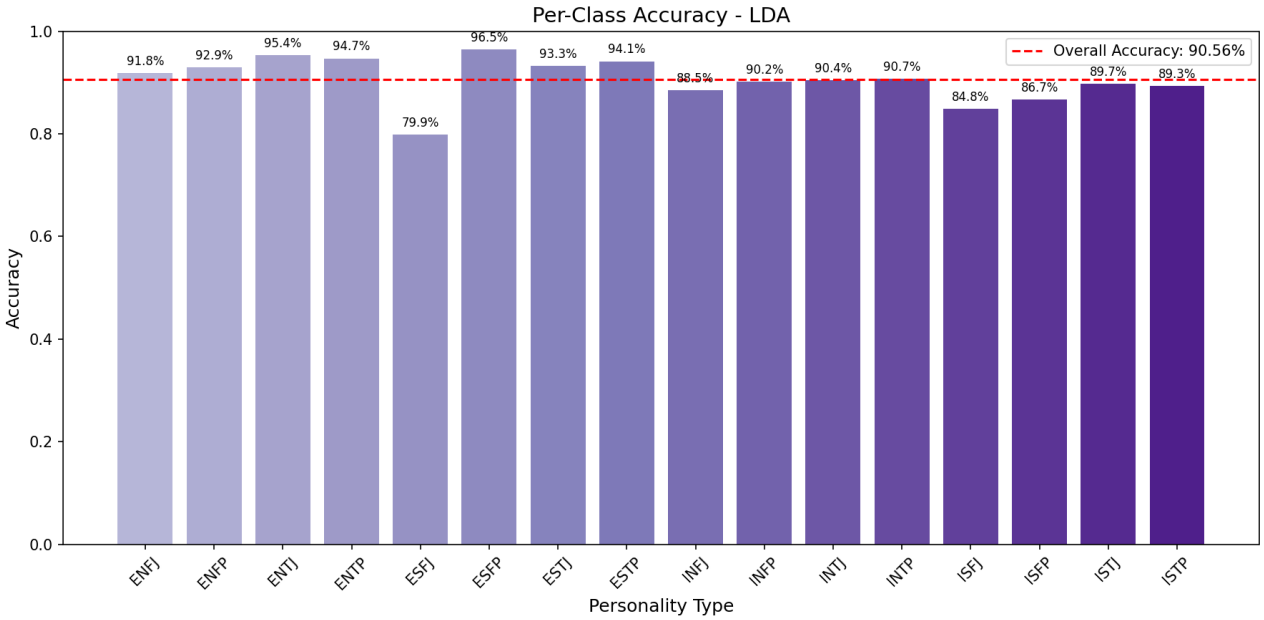
4.2 Feature Importance



4.3 Per-Class Accuracy

Linear Discriminant Analysis (LDA) Classifier Report

Project: Multi-Class Classification of Personality Types (MBTI)



Linear Discriminant Analysis (LDA) Classifier Report

Project: Multi-Class Classification of Personality Types (MBTI)

5. Conclusion

LDA achieves 90.56% test accuracy on the 16-class MBTI personality prediction task. As a classical linear classifier, LDA provides interpretable linear decision boundaries while also performing dimensionality reduction.

Key Takeaways:
- Uses same data splits as other models for fair comparison
- Provides interpretable linear decision boundaries
- Efficient computation via SVD solver
- No hyperparameter tuning required