

ASD vs TD Binary Classification - Summary

Generated: 2025-09-12T00:01:49.904716

Completed Phases: data_preparation, feature_engineering, exploratory_analysis, model_development

Data Summary:

Total sessions: 823

Unique children: 270

Label distribution: {'ASD': 489, 'TD': 334}

Model Performance (Holdout):

Best model: LightGBM [spw=0.75]

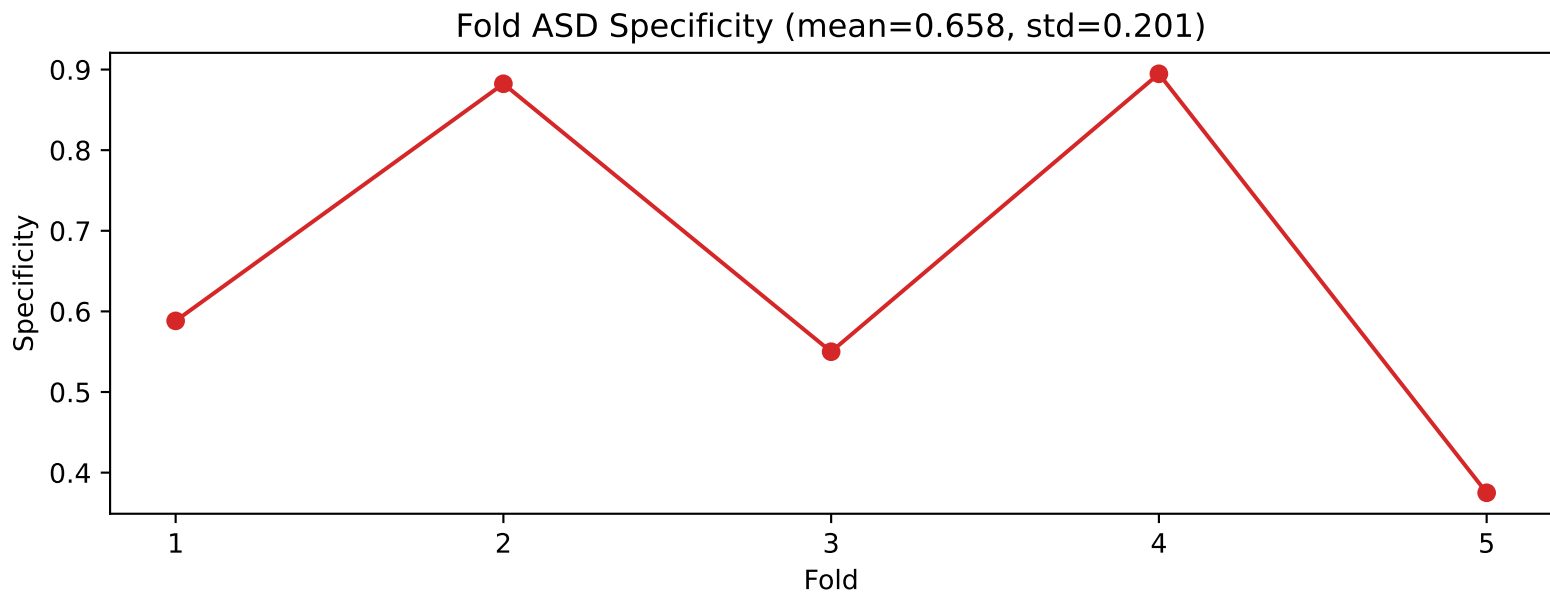
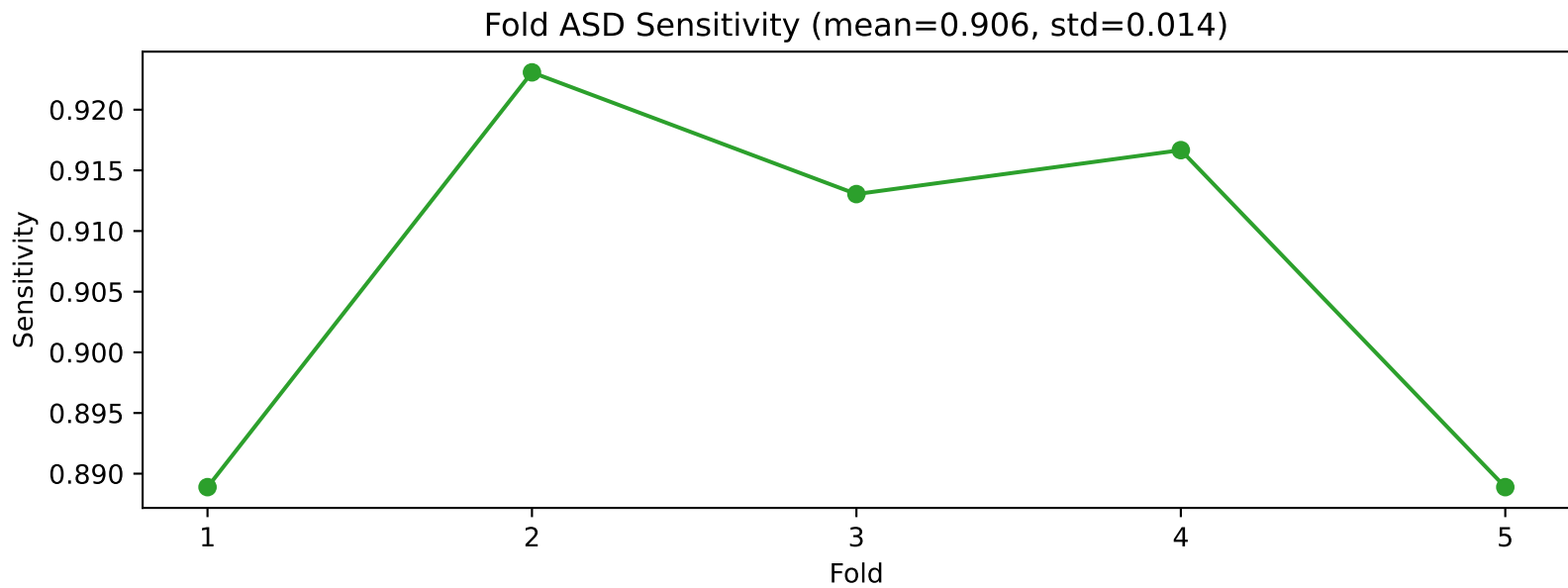
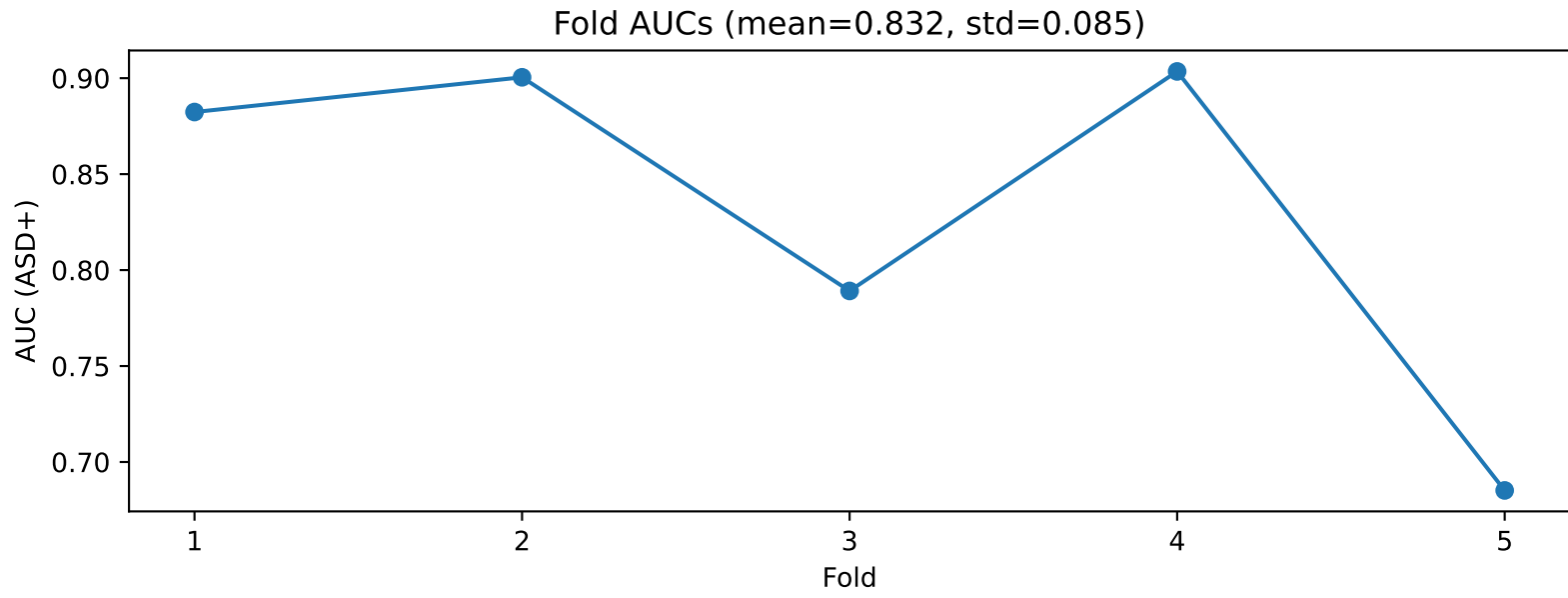
Best CV AUC: 0.927

Holdout AUC: 0.8845598845598845

Holdout ASD Sensitivity: 0.8787878787878788

Holdout ASD Specificity: 0.2857142857142857

Cross-Validation Metrics (LightGBM [spw=0.75])



Ablation: Base vs RAG-Augmented (best model)

Best model: LightGBM [spw=0.75]

Target ASD Sensitivity: 0.86

CV (mean \pm std):

Base AUC: 0.653 ± 0.000

Base Sens: 0.889 ± 0.000

Base Spec: 0.312 ± 0.000

RAG AUC: 0.832 ± 0.085

RAG Sens: 0.906 ± 0.014

RAG Spec: 0.658 ± 0.201

Holdout:

Base AUC: 0.7994227994227995

Base Sens: 0.8787878787878788

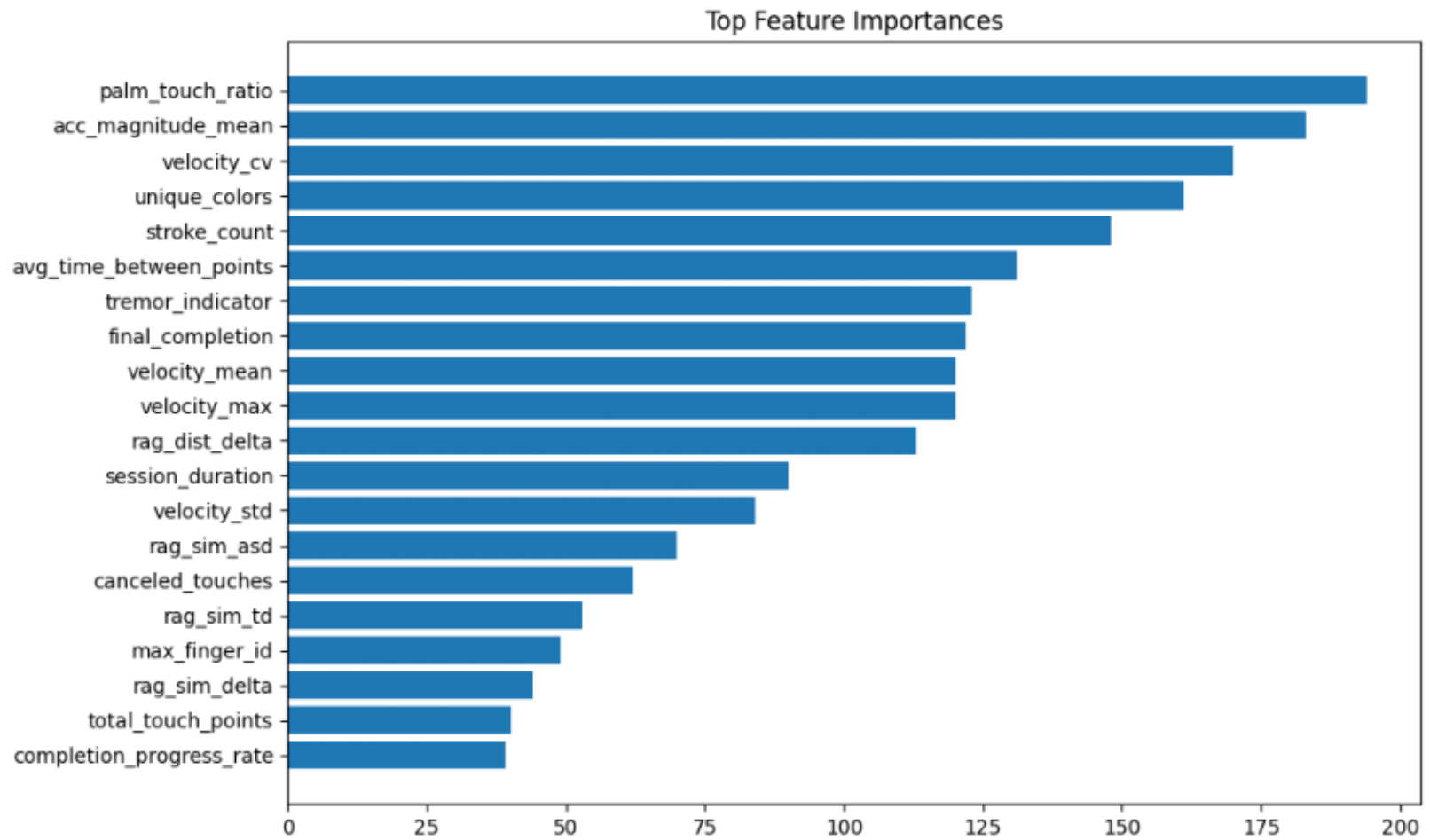
Base Spec: 0.33333333333333337

RAG AUC: 0.7763347763347763

RAG Sens: 0.8787878787878788

RAG Spec: 0.2857142857142857

top_features.png



shap_summary.png

