Predicting Interview Performance

Using Language and Speech

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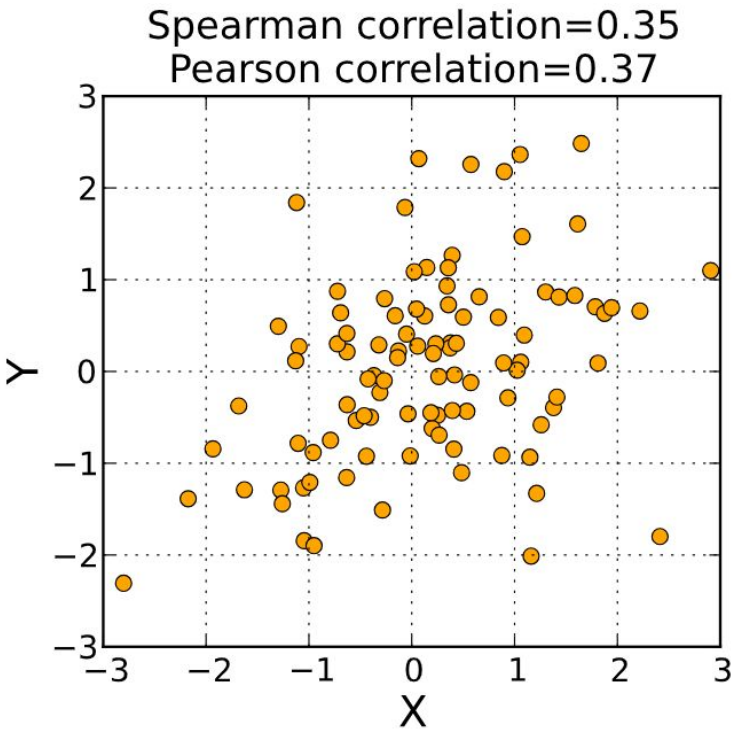
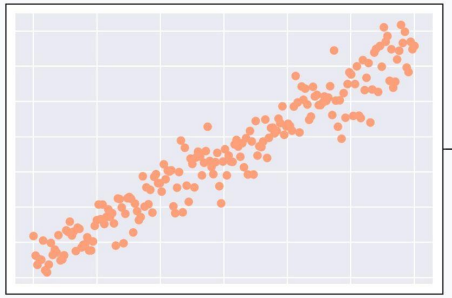
Preprocessing and First Steps

- Just under 140 transcripts, broke across participants with one or two interviews
- Ordered transcripts by participant, divided them into interviewer, interviewee, and total.
- Used VADER sentiment analysis across all the transcripts, and computed statistics as features.
- Computed spearman correlation and mutual information

Why Spearman ?



Linear Data

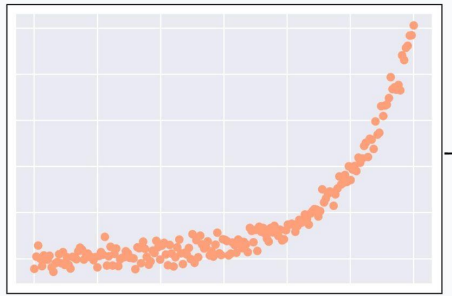


Pearson Correlation **0.96**

Same

Spearman Correlation **0.96**

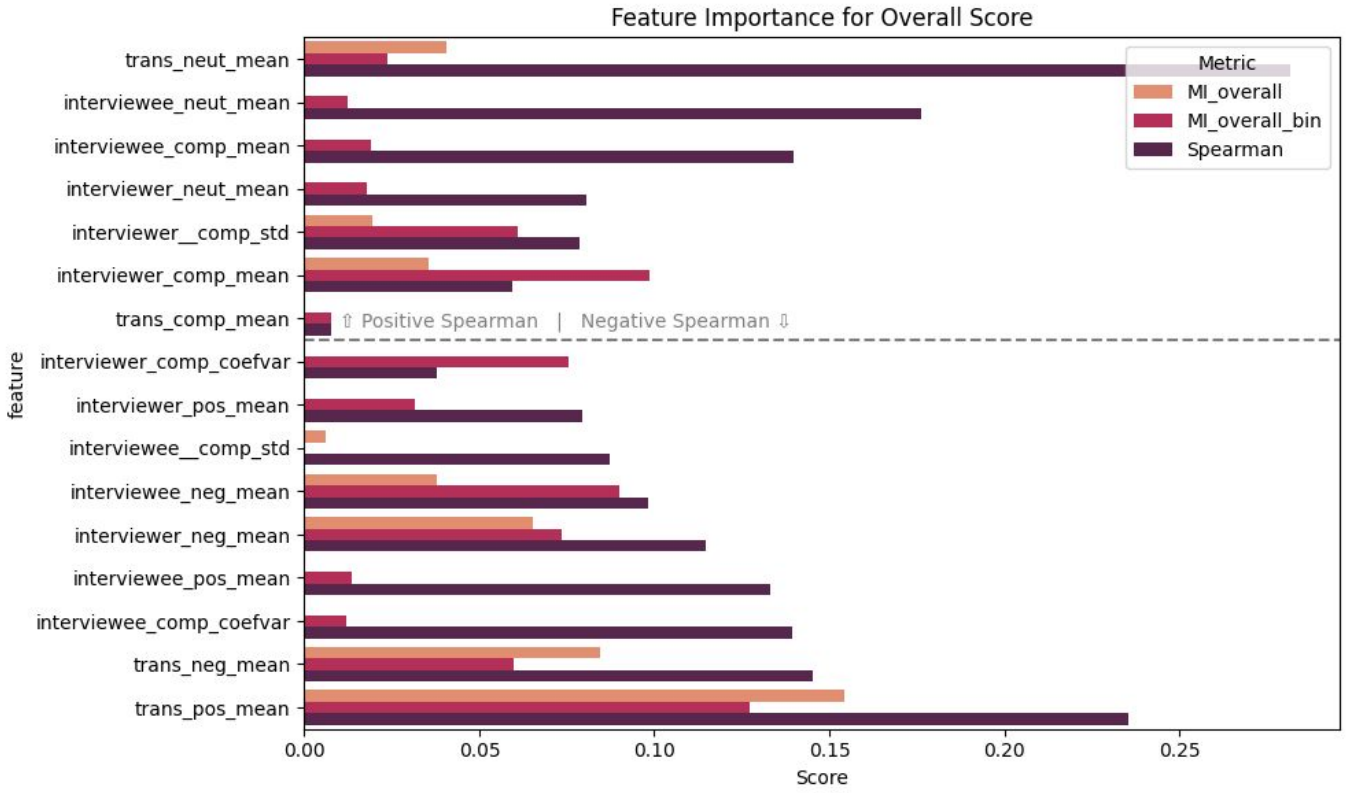
Non-linear Data



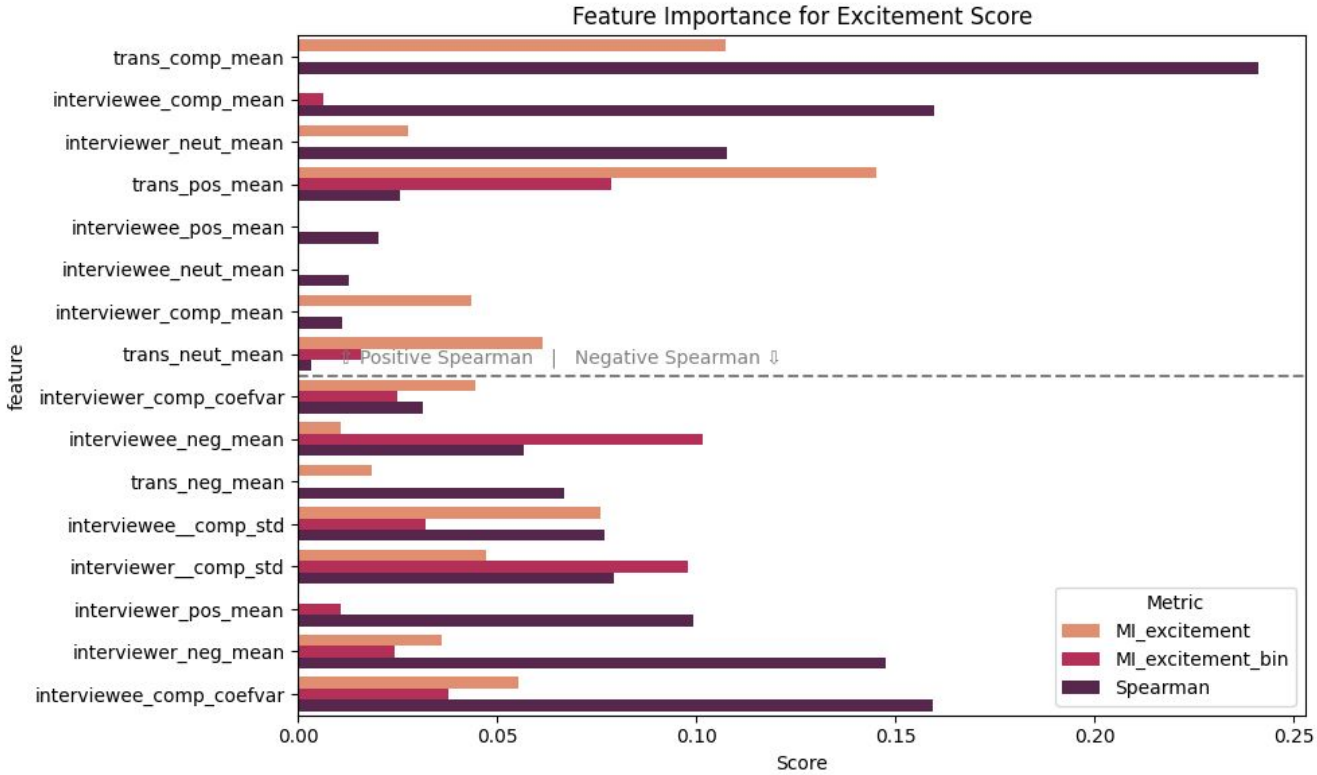
Pearson Correlation **0.76** ❌

Spearman Correlation **0.92** ✅

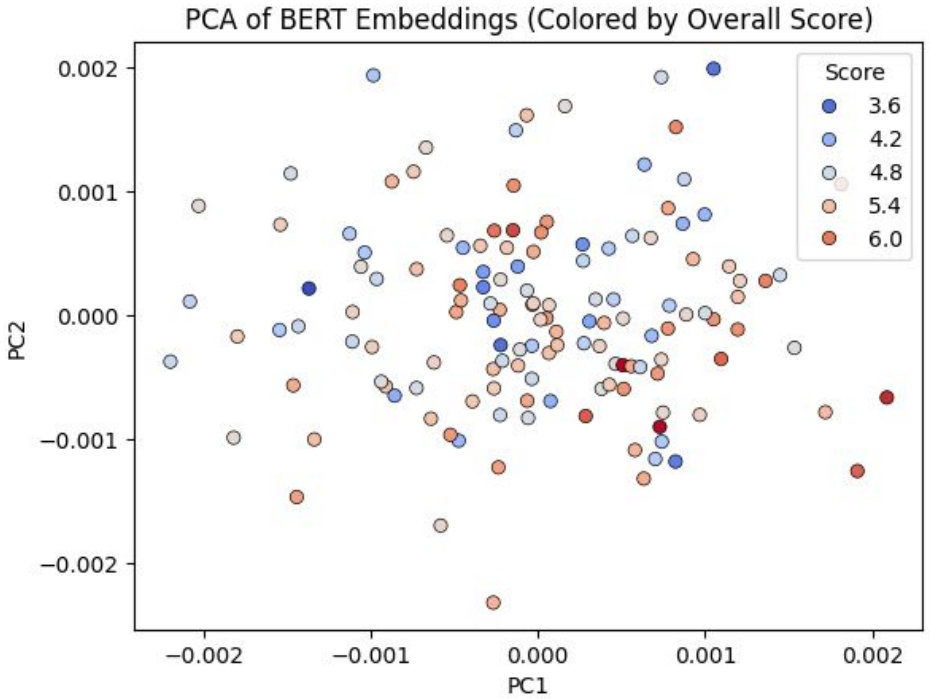
Vader Feature Importance for Overall Score

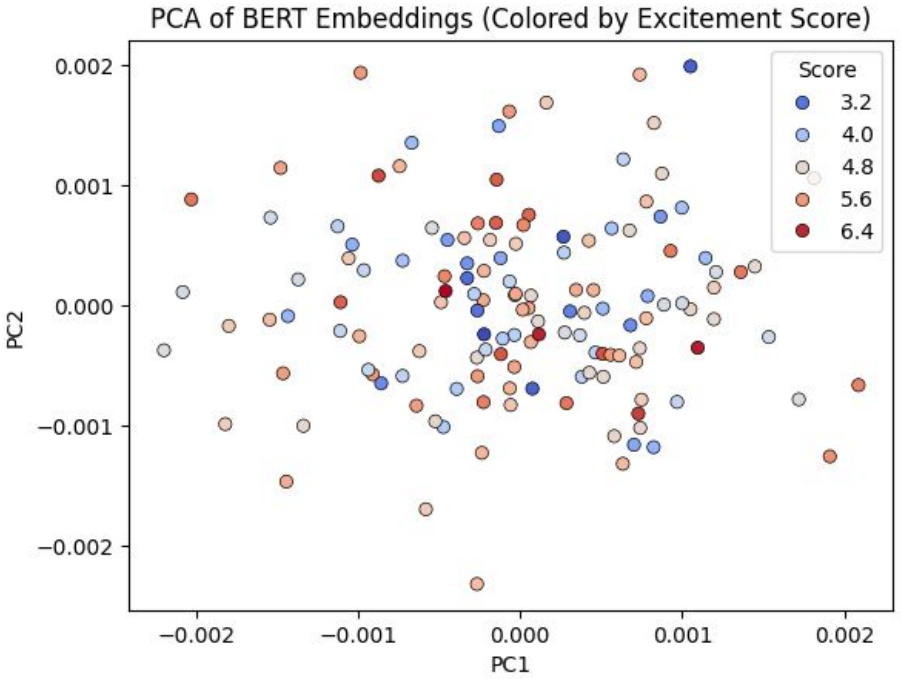


Vader Feature Importance for Excitement Score

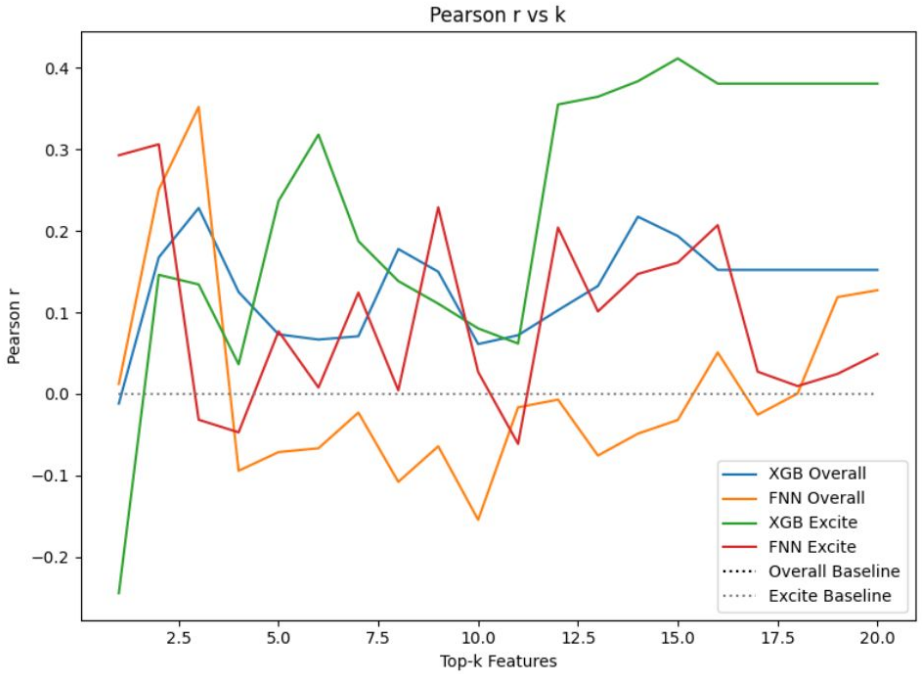


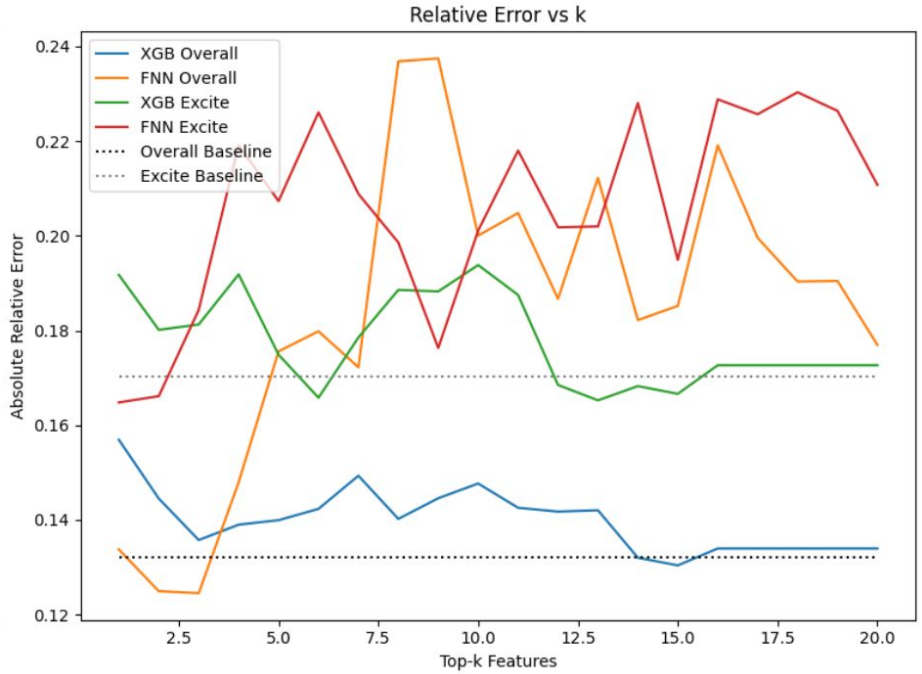
BERT PCA


PCA of BERT Embeddings (Colored by Overall Score)
Score
3.6
4.2
4.8
5.4
6.0
PC1
PC2
0.002
0.001
0.000
−0.001
−0.002

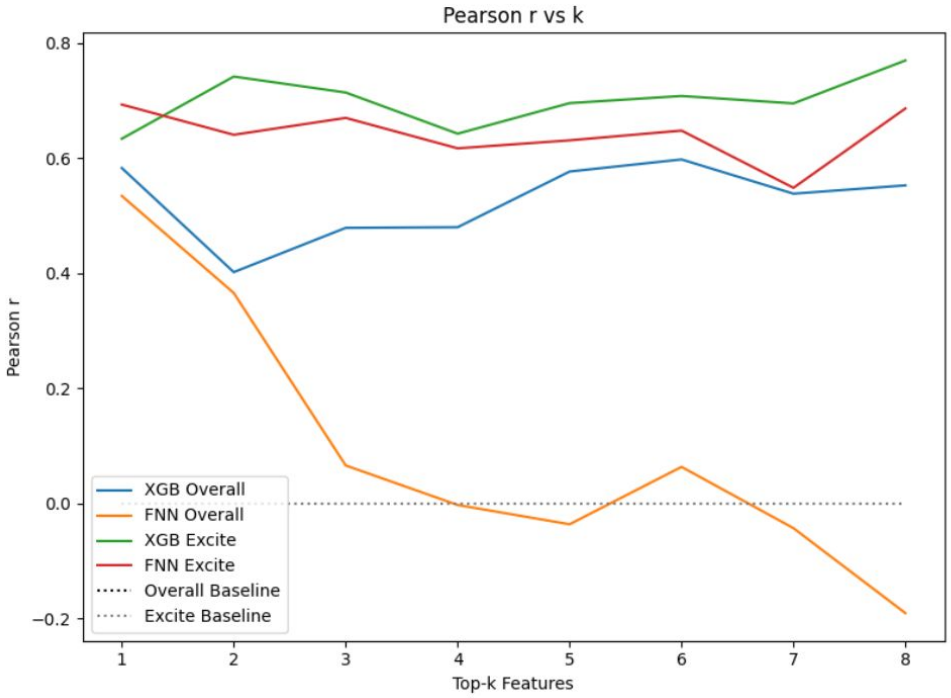

PCA of BERT Embeddings (Colored by Excitement Score)
Score
3.2
4.0
4.8
5.6
6.4
PC1
PC2
0.002
0.001
0.000
−0.001
−0.002

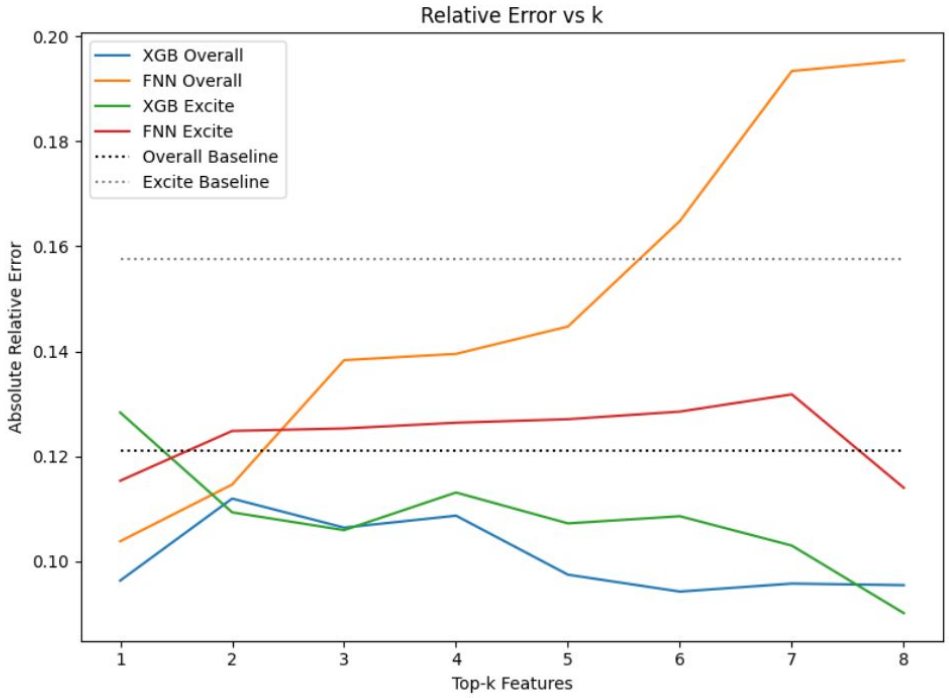
Semantic Features from Vader



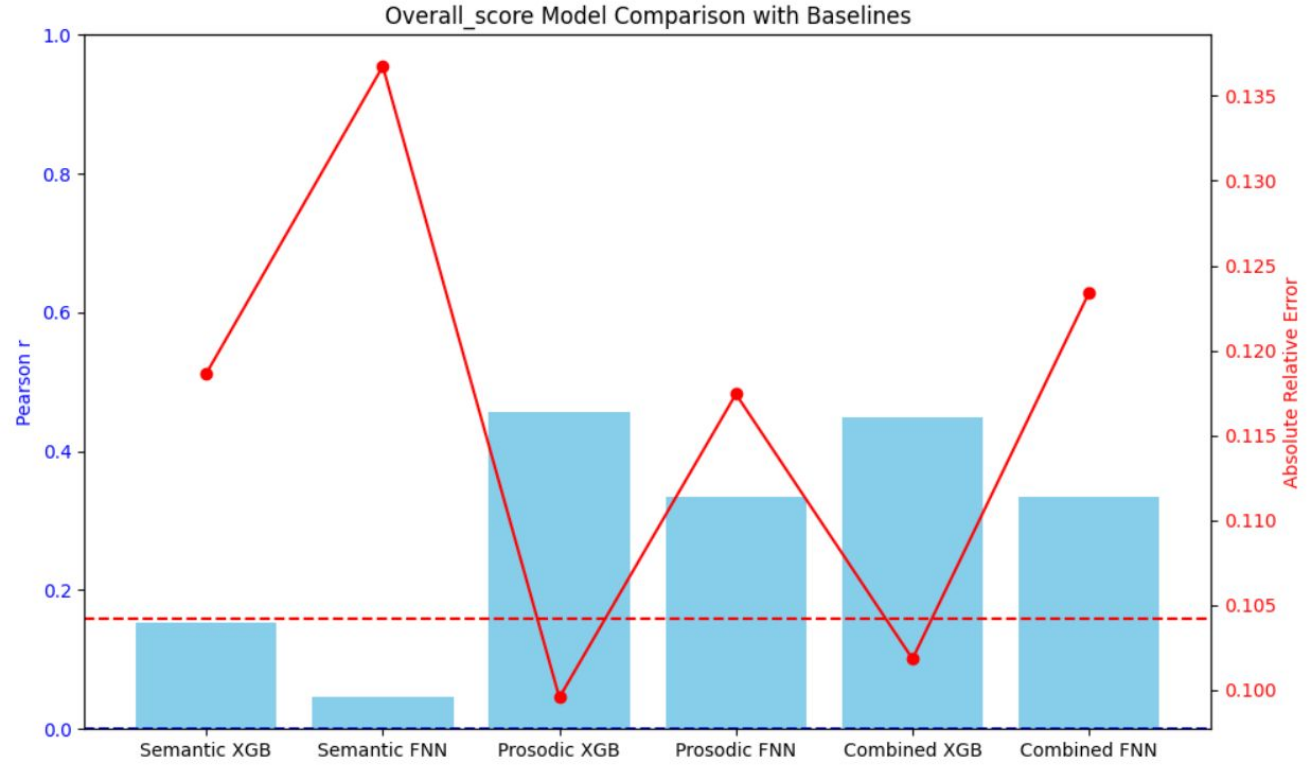


Prosodic Features



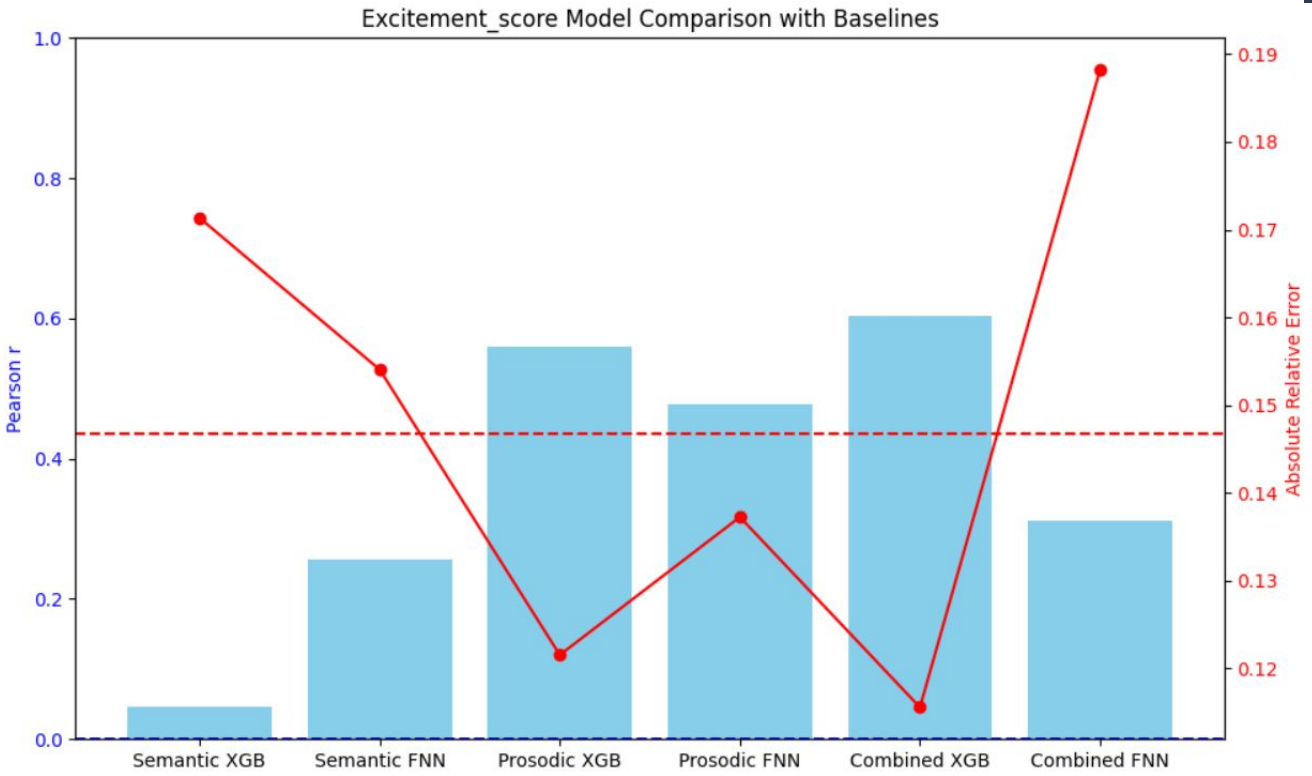


Multimodal: Overall Score



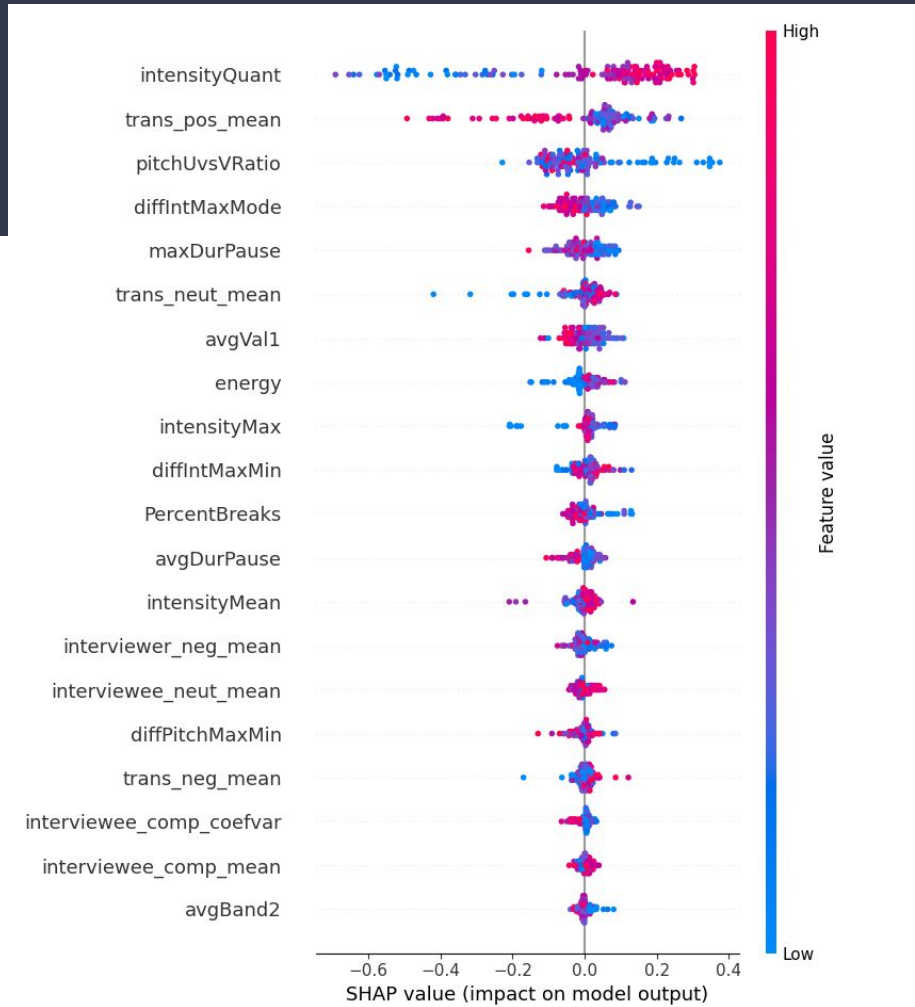
feature	importance
intensityQuant	0.231877
diffIntMaxMode	0.113971
diffPitchMaxMode	0.079114
trans_pos_mean	0.054319
pitchUvsVRatio	0.053505
intensityMax	0.046805
trans_neut_mean	0.040417
pitch_abs	0.033939
maxDurPause	0.027644
jitter	0.025369

Multimodal: Excitement Score

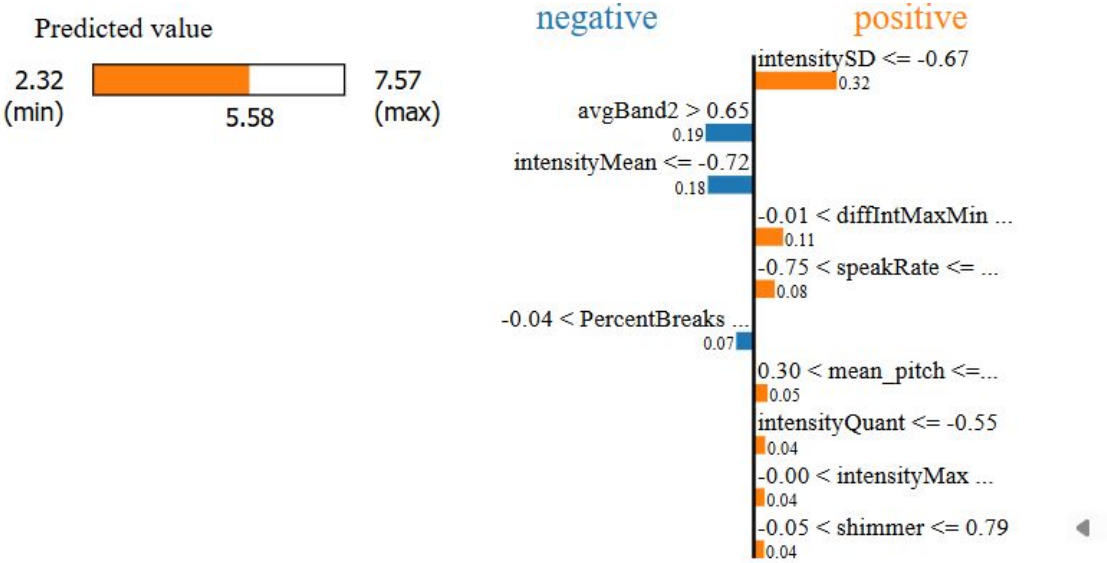


feature	importance
intensityQuant	0.427745
intensityMean	0.118410
mean_pitch	0.073724
speakRate	0.037671
pitch_abs	0.030086
pitchUvsVRatio	0.026272
intensitySD	0.024032
diffIntMaxMin	0.021763
avgBand2	0.019383
trans_pos_mean	0.016217

SHAP for XGB: Overall Score

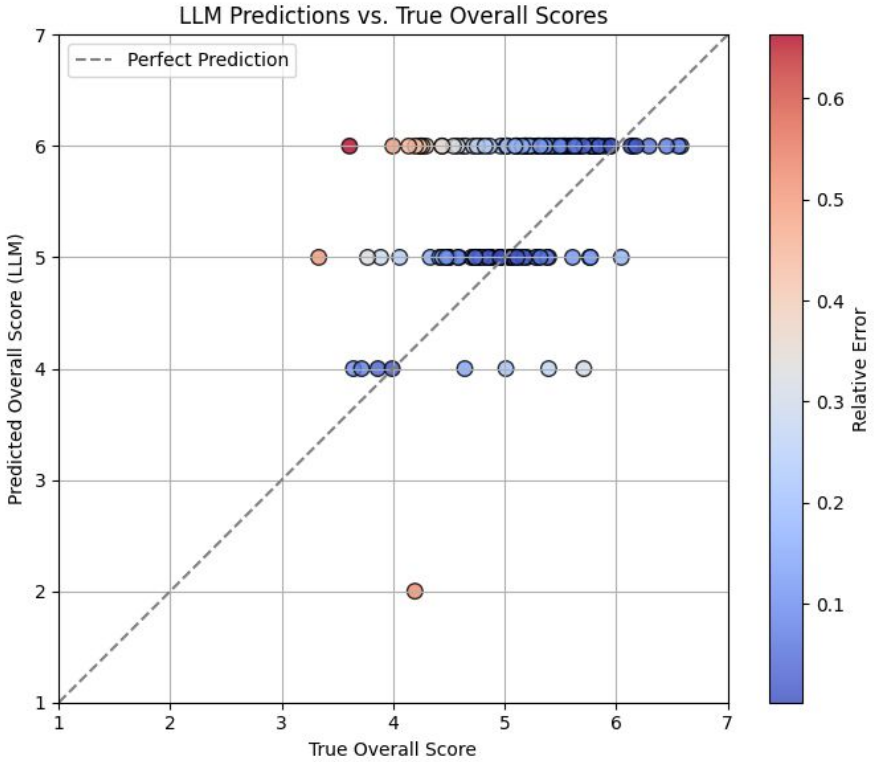


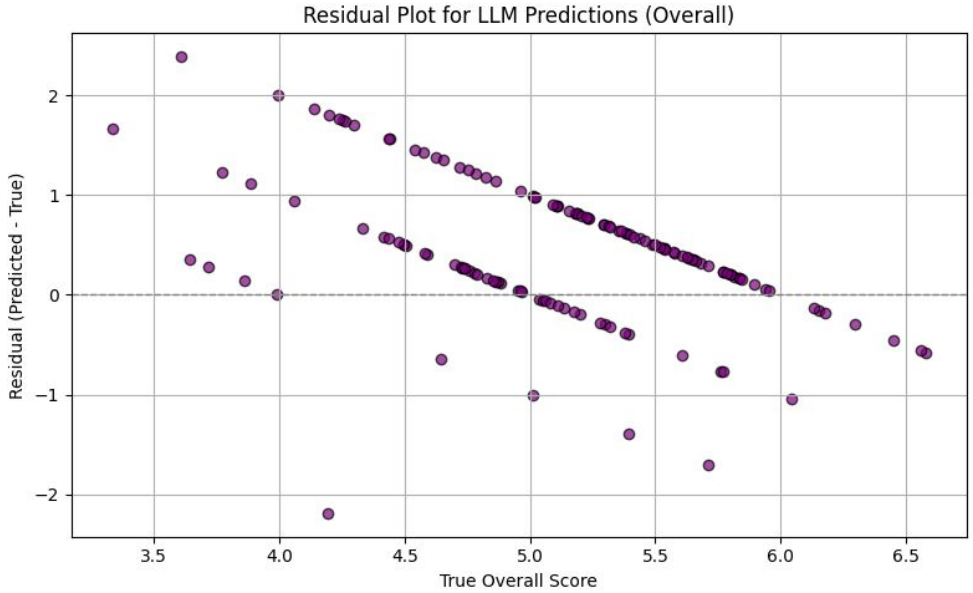
LIME for FNN – Excitement Score



Feature	Value
intensitySD	-1.05
avgBand2	0.66
intensityMean	-0.97
diffIntMaxMin	0.14
speakRate	-0.68
PercentBreaks	0.51
mean_pitch	0.41
intensityQuant	-1.02
intensityMax	0.15
shimmer	0.47

LLM Predictions





Thank you for listening!

Questions???