3D Face Verification Report

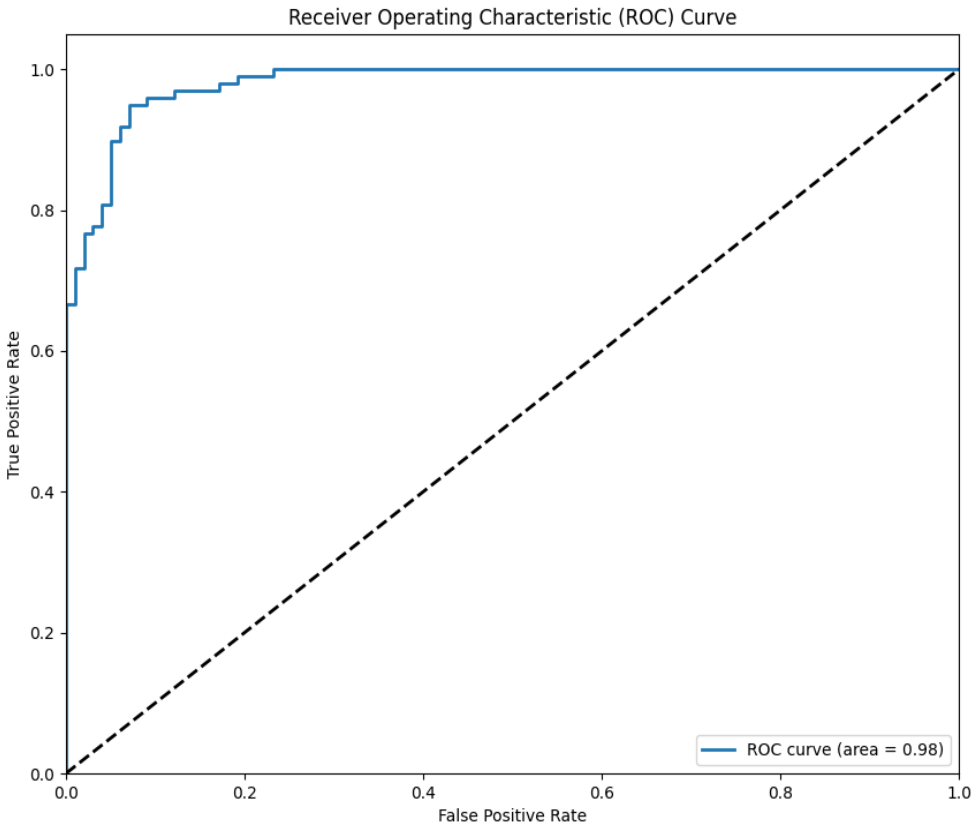
1. Summary

Verification Metrics

Metric	Value
Best Accuracy Threshold	0.8283
Accuracy at Best Threshold	0.9040
Precision	0.8704
Recall	0.9495
F1 Score	0.9082
False Accept Rate (FAR)	0.1414
False Reject Rate (FRR)	0.0505
Equal Error Rate (EER)	0.0758
EER Threshold	0.8384
ROC AUC	0.9808
Total Same-Identity Pairs	99
Total Different-Identity Pairs	99

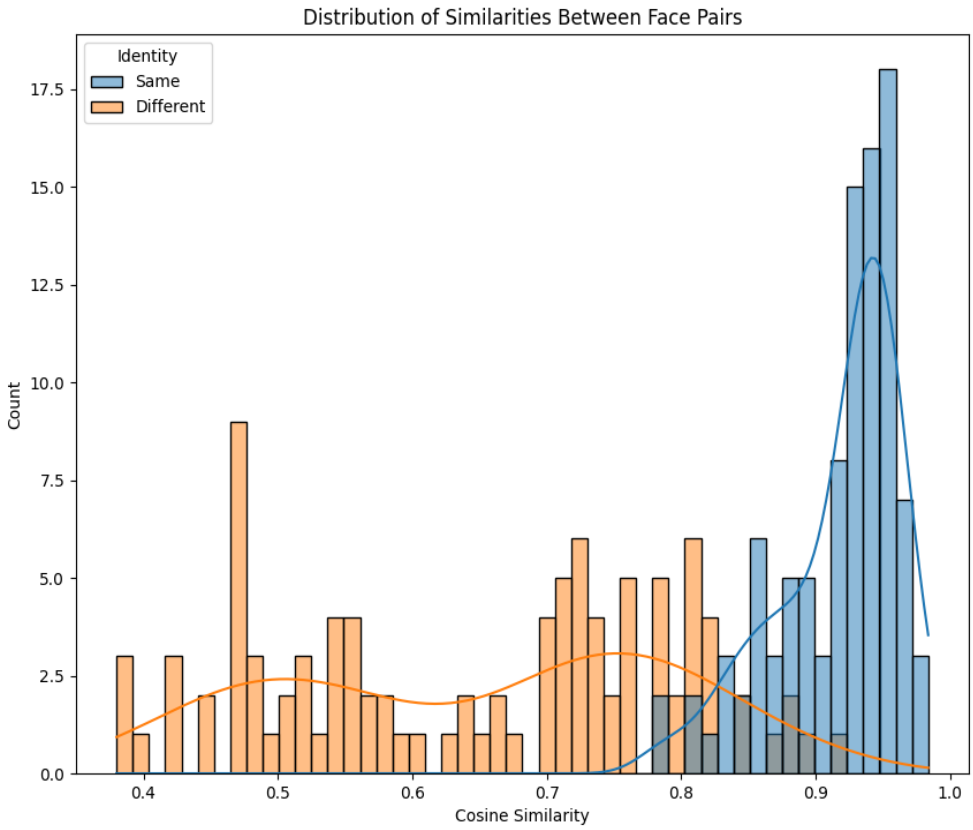
2. ROC Curve

The Receiver Operating Characteristic (ROC) curve shows the trade-off between true positive rate and false positive rate at different thresholds.



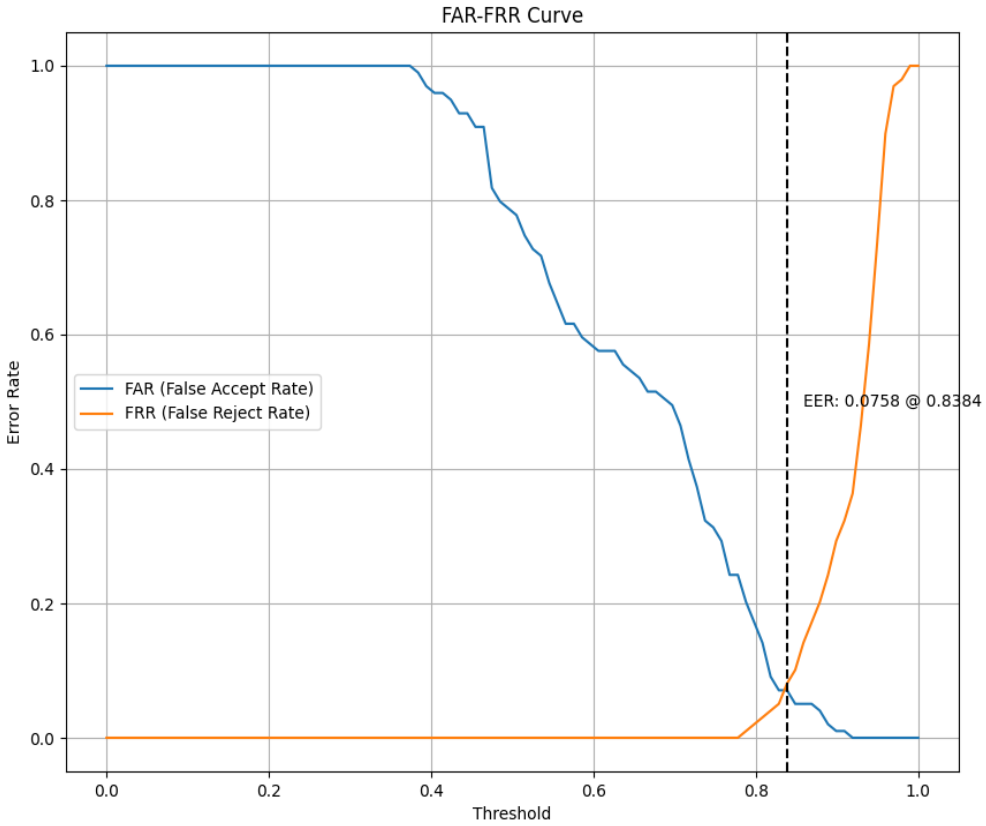
3. Similarity Distribution

The distribution of cosine similarities between same-identity and different-identity face pairs:



4. FAR-FRR Curve

The False Accept Rate (FAR) and False Reject Rate (FRR) at different thresholds. The Equal Error Rate (EER) is the point where FAR equals FRR.



5. Conclusions and Recommendations

The 3D face verification system achieves an Equal Error Rate (EER) of 0.0758, which is good. For optimal accuracy, a similarity threshold of 0.8283 is recommended, which yields: - Accuracy: 0.9040 - Precision: 0.8704 - Recall: 0.9495 The ROC AUC of 0.9808 indicates excellent discriminative power.

Recommendations for improvement: 1. If the EER is above 0.1, consider: - Collecting more training data - Improving the quality of 3D face scans - Increasing the embedding dimensionality 2. If the similarity distributions have significant overlap: - Try increasing the margin in the loss function - Explore different feature extraction architectures 3. For production deployment: - Choose a threshold based on the specific security requirements - For high security, use a higher threshold (lower FAR, higher FRR) - For convenience, use a lower threshold (higher FAR, lower FRR)