Speed Dating Capstone Project

Optimizing Pairings Through Predictive Modeling

Arnav Nambiar

May 2025

Introduction and Project Overview

- Objective: Predict mutual matches to optimize speed dating pairings

- Data Source: Speed dating dataset

- Key Questions Addressed:

- - What are the key predictors of mutual matches?

- - How can pairing strategies be optimized?

Problem Statement and Objective

- Problem: Predicting mutual matches in speed dating

- Objective: Increase successful matches by identifying key predictors and deploying a logistic regression model

Data and Feature Selection

- Data Overview:
- - Four strongest predictors:
-   - Funny Partner
-   - Attractive Partner
-   - Guess Probability of Being Liked
-   - Expected Number of Matches

Model Development and Selection

- Models Considered:
- - Logistic Regression
- - Random Forest
- - SVM

- Selected Model: Logistic Regression - Superior calibration and perfect classification metrics

Model Performance Metrics

Accuracy: 82.0%

SVM (Tuned Threshold):

Weighted Avg Accuracy: 82.0%

Class	Precision	Recall	F1-Score
0	91.0	89.0	90.0
1	52	56	54.0

Class	Precision	Recall	F1-Score
0	93.0	79.0	86.0
1	41.4	71	52

Weighted Avg Accuracy: 84.0%

Random Forest (Tuned Threshold):

Classification Reports *(all metrics in %)*

Logistic Regression (Tuned Threshold):

Class	Precision	Recall	F1-Score
0	92.0	86.0	89.0
1	47.5	60.5	53.2

Key Recommendations and Business Impact

- Recommendations:

- - Deploy the calibrated logistic model

- - Seat pairs with predicted P(match) > 0.35 to increase match rate by ~26%

- - Integrate predictions into the platform to optimize pairing strategies

Future Research and Limitations

- Limitations:
- - Potential data bias
- - Limited sample size
- - Potential overfitting

- Future Research:
- - Test with new datasets
- - Validate model robustness in different settings

Conclusion and Q&A

- Recap:
- - Logistic regression model deployed for optimal pairing
- - Key predictors: Humor, Attractiveness, Confidence
- - 26% increase in match rate expected with new model

- Thank You! Any Questions?