PERSONALITY PREDICTION USING MACHINE LEARNING

ANALYZING PSYCHOLOGICAL TRAITS WITH PREDICTIVE MODELS

GROUP-11

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ABSTRACT

- Uses ML to analyze and predict human personality traits.
- Applies predictive models and visualization techniques.
- Maps traits to MBTI and Big Five frameworks.
- Valuable for HR, counseling, education, and marketing.
- Bridges behavioral psychology with modern data science tools.

INTRODUCTION

- What is Personality?
- Patterns in thinking, feeling, and behavior.
- Why It Matters:
- Useful in personal growth, hiring, relationships, etc.
- Frameworks Used:
- MBTI (16 types)
- Big Five traits
- Aim:
- Use ML to analyze and predict personality.

OBJECTIVES

- Perform exploratory data analysis (EDA).
- Visualize trait distributions and interactions.
- Predict MBTI, stability, introversion.
- Apply clustering to find personality groups.
- Evaluate models using accuracy, recall, precision.

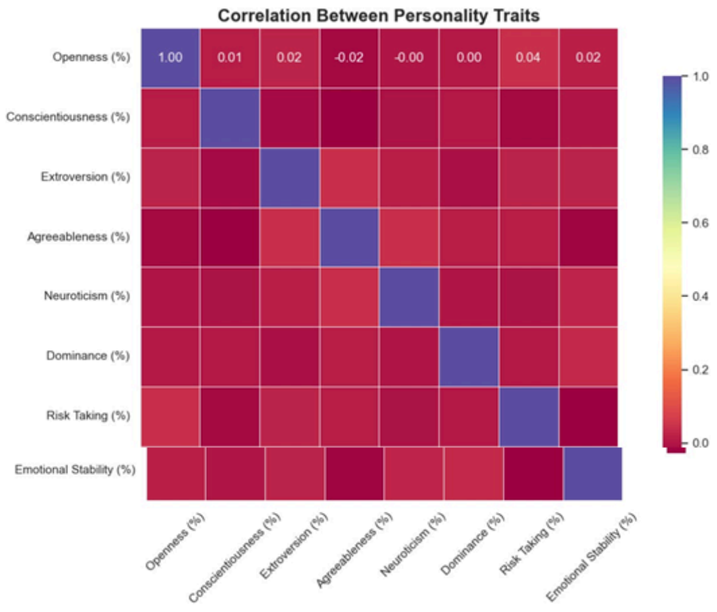
DATA PREPROCESSING

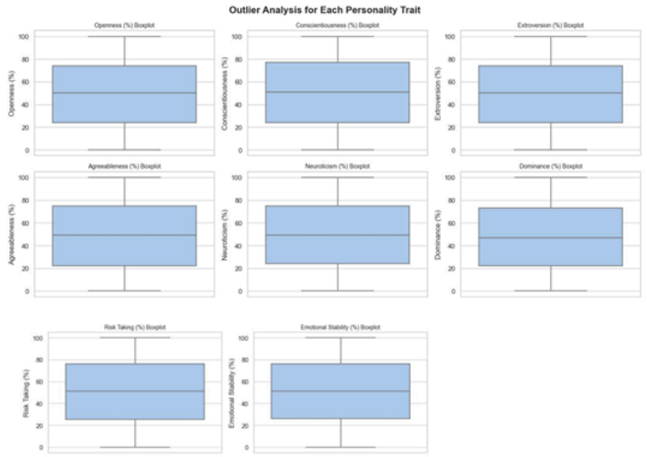
- Cleaned dataset and removed incomplete entries.
- Encoded categorical values numerically.
- Created binary features (e.g., Introvert, High Stability).
- Assigned MBTI and broader labels.
- Normalized data for uniform scaling.

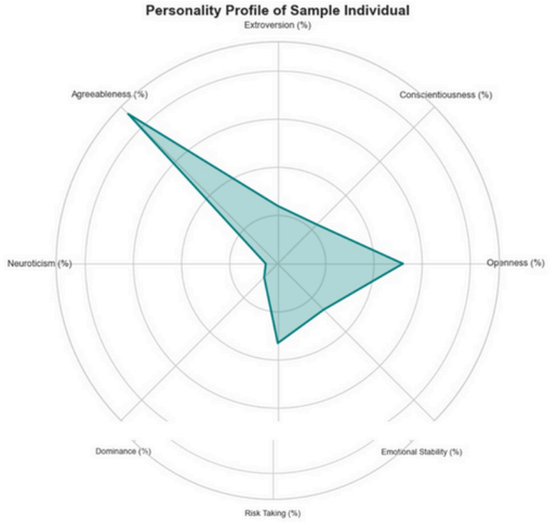
CORRELATION & VISUAL ANALYSIS

Visual tools included:

- Boxplots
- Radar charts
- Histograms







MODEL BUILDING & CLASSIFICATION

Goal: Predict personality traits with ML.

- Models Used:
- Random Forest
- Logistic Regression
- SVM, KNN, Gradient Boosting

Predicted:

- MBTI
- Introvert/Extrovert
- Emotional Stability

Metrics: Accuracy, F1-score, Recall, Precision

CLUSTERING & UNSUPERVISED LEARNING

- Used K-Means to group similar individuals.
- Applied PCA for 2D visualization.
- Found 4 distinct clusters.
- Clusters aligned with known personality types.
- Clustering validated patterns seen in classification.

CROSS-VALIDATION & MODEL COMPARISON

- Used 5-fold cross-validation.
- Top Models:
- Random Forest: High accuracy, reliable
- Logistic Regression: Interpretable
- SVM and KNN needed tuning.
- Compared models using consistent evaluation metrics

CONCLUSION & KEY FINDINGS

- ML accurately predicts personality types.
- Correlation analysis revealed meaningful insights.
- Supervised and unsupervised methods aligned.
- Confirms ML's potential in psychological profiling.
- Opens doors for practical applications across sectors.

FUTURE SCOPE

Use deep learning for complex trait prediction.

Integrate with real-time apps and chatbots.

Analyze social media and behavioral data.

- Expand datasets with diverse demographics.

THANK YOU