PersonalityPredict.AI

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Submitted in partial fulfillment of the requirements
of the degree of

Bachelor of Engineering
(Information Technology)

By

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Under the guidance of

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(An Autonomous Institute, Affiliated to University of Mumbai)

Vivekanand Education Society's
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(Autonomous Institute Affiliated to University of Mumbai, Approved by AICTE & Recognised by Govt. of Maharashtra)
NAAC accredited with 'A' grade

April 2024

Certificate

This is to certify that project entitled

"Resourcify"

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Declaration

We declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea or data or fact or source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Abstract

PersonalityPredict.AI is a web-based intelligent personality prediction system that analyzes user-generated textual input to determine their personality type—**Introvert**, **Extrovert**, or **Ambivert**—using machine learning. Built with **Flask** as the backend framework, the application ensures a lightweight yet powerful deployment environment that facilitates real-time predictions and smooth user interaction. A trained **Natural Language Processing (NLP)** model processes the input and returns personality predictions along with **dynamically selected motivational quotes**, offering personalized insight and engagement.

The system incorporates **secure user authentication using OTP-based login** via email, with user data managed through **MongoDB**, ensuring session-based protection and access control. The intuitive front-end interface, styled with **Bootstrap 5**, offers dark/light mode toggle, responsive design, and a modern UX for an enhanced user experience. Additionally, the application integrates a real-time prediction API, enabling seamless interaction between the frontend and the trained ML model.

PersonalityPredict.AI aims to provide users with an interactive and intelligent self-assessment experience and demonstrates the practical integration of AI and web technologies in a personalized web application.

Contents

ACKNOWLEDGEMENT

The project report on **"PersonalityPredict.AI"** is the result of constant encouragement, support, and valuable guidance received by our team throughout the development process. We sincerely acknowledge and express our heartfelt gratitude to all those who have inspired and contributed to this project. First and foremost, we extend our deep appreciation to **HOD Dr. (Mrs.) Shalu Chopra**, **Deputy HOD Dr. Manoj Sabnis**, and our **project guide Mrs. Dipti Karani** for their insightful feedback, technical mentorship, and unwavering support. We are also thankful to **Vivekanand Education Society's Institute of Technology** for providing us with the infrastructure, resources, and a conducive learning environment that fueled our curiosity and dedication to build this application.

Chapter 1

Introduction

1.1. Introduction

The growing role of artificial intelligence (AI) in personal development and behavioral psychology has inspired the development of this project. PersonalityPredict.AI is a Flask-based intelligent web application that leverages machine learning (ML) to predict a user's personality type (Introvert, Extrovert, or Ambivert) based on textual self-descriptions. It integrates real-time text analysis, secure authentication, OTP verification, and dynamic UI updates..

1.2. Objectives

- Enable users to sign up and log in securely with OTP-based verification.
- Allow users to enter personal text for personality prediction.
- Classify users as Introvert, Extrovert, or Ambivert based on ML output.
- Provide a curated motivational quote based on their predicted personality.
- Ensure real-time interaction through Flask API and JavaScript.
- Provide a clean UI and seamless user experience.

1.3. Motivation

In an age where mental health, introspection, and personality understanding are vital, offering users a tool to gain insight into their personality type through simple text interaction is both useful and socially impactful. Additionally, integrating AI with psychology via web development offers a unique learning opportunity.

1.4. Scope of the Work

- Personality prediction using machine learning with trained text data.
- Real-time prediction response using JavaScript and Flask API integration.
- OTP-based secure login using Flask-Mail and MongoDB.
- Quote generation from a curated personality_quotes.txt file.
- Frontend support with Bootstrap and custom CSS.
- User interface supporting theme toggling (dark/light).

1.5. Feasibility Study

- **Technical Feasibility:** Uses Python-based libraries (Flask, joblib, sklearn), MongoDB, and Bootstrap.
- **Operational Feasibility:** Smooth UX for all users with basic internet skills.
- **Economic Feasibility:** Uses only open-source technologies and can be hosted on free servers.

Chapter 2

Literature Survey

2.1. Introduction

Text-based personality prediction is emerging as a subdomain of affective computing. Several models attempt to assess emotional or psychological traits based on user-generated text, but many lack real-time responsiveness or are limited to theoretical studies.

2.2. Review of Literature Survey

- **Personality Classification of Text through Machine Learning and Deep Learning: A Review**
Perera & Costa (2023)
This study explores various approaches to personality classification using machine learning and deep learning techniques. It emphasizes the significance of textual data in determining personality traits and discusses models like the Big Five and Myers-Briggs Type Indicator (MBTI) for classification purposes.

- **Deep Learning Based Text Classification: A Comprehensive Review**
Minaee et al. (2020)
This comprehensive review covers over 150 deep learning models for text classification, highlighting their technical contributions and performance on various benchmarks. The paper underscores the advancements in deep learning that have significantly improved text classification tasks.

- **Recent Trends in Deep Learning Based Personality Detection**
Mehta et al. (2019)
The paper reviews significant machine learning models employed for personality detection, focusing on deep learning-based methods. It provides an overview of popular approaches, datasets, and industrial applications related to automated personality detection.

- **A Survey on Text Classification: From Shallow to Deep Learning**
Li et al. (2020)
This survey presents a taxonomy of text classification models, discussing both traditional and deep learning approaches. It provides insights into feature extraction methods, model architectures, and evaluation metrics pertinent to text classification tasks.

- **Using Machine Learning to Advance Personality Assessment and Theory**
Bleidorn & Hopwood (2019)
The article discusses the integration of machine learning in psychological assessments, highlighting how digital records and social media data can be utilized to predict personality traits effectively.

2.3. Existing Systems

System	Features	Limitations
MBTI Online Tests	Survey-based classification	Time-consuming, subjective, not AI-driven
Watson Personality Insights (IBM)	AI-powered personality prediction	Expensive, requires API subscription
GPT-4-based personality predictions	Intelligent, contextual	Needs extensive computing power, no personalization

Chapter 3

Design and Implementation

3.1 Requirement Gathering

Functional Requirements:

- User Registration and OTP-based Login
- Secure session handling
- Text analysis for prediction
- Quote assignment based on result
- Real-time result display

Non-Functional Requirements:

- Responsive design
- Minimal latency
- Scalable backend
- Robust session and error handling

3.2 Proposed System Design

Module	Function
Frontend (HTML/CSS/JS)	Takes user input, shows results
Flask Backend	Handles routing, OTP, ML model, and quote logic
Machine Learning Model	Classifies user as introvert/extrovert/ambivert
MongoDB	Stores user data and session information
Quotes File	Maps personality to motivational quotes

3.3 Technology Stack

- **Python 3**
- **Flask**
- **Sklearn / Joblib**
- **MongoDB**
- **HTML, CSS, Bootstrap**
- **JavaScript (for real-time interaction)**
- **Flask-Mail**

3.4 User Interface

- **Responsive navbar with profile dropdown**
- **Light/Dark toggle support**
- **Predict button with animation**
- **Clear display of prediction + quote**

Chapter 4

Results and Discussion

4.1 Home /Login Page

Basic landing page prompting for login or signup. Flask-Mail handles OTP-based secure authentication..

4.2 OTP and Verification

Generates 6-digit OTP and verifies it before allowing prediction access. Ensures secure login.

4.3 Text Input and Prediction

User enters a description of themselves. The input is passed to Flask API (/api/predict) which returns both personality and a motivational quote.

4.4 Personality Quote Generation

Based on personality type (predicted using model), a quote is fetched from personality_quotes.txt.

4.5 Observations

- Quotes matched personality accurately in most tests
- The model accuracy was consistent (~81%)
- UX was intuitive and accessible
- OTP feature added a layer of security

Chapter 5

Conclusion

5.1. Conclusion

The Personality Predictor application meets its objective of delivering a meaningful and responsive platform for personality classification. It uses real-time input, secure access, and motivational feedback to engage users.

5.2. Future Scope

- Improve model accuracy with more NLP features
- Add multilingual support
- Enable user profile saving of past results
- Visualize personality data using graphs
    - Add AI-powered quote generation using GPT APIs

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