**A**
**Project Report**
on

# Manobal : A Personality Development App

submitted as partial fulfillment for the award of

# BACHELOR OF TECHNOLOGY DEGREE

**SESSION 2024-25**

in

## Computer Science and Engineering


By

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Affiliated to

**Dr. A.P.J. Abdul Kalam Technical University, Lucknow**
**(Formerly UPTU)**
**MAY, 2025**

# DECLARATION

*We hereby declare that this submission is our own work and that, to the best of our knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text.*

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# CERTIFICATE

This is to certify that *Project Report entitled* – ***"Manobal"*** which is submitted by *Prince Kumar* **(2102310100075), Khushi Chaudhary (2102310100055), Nitish Kumar (2102310100070), Prabhat Chaudhary (2102310100073)** in partial fulfillment of the requirement for the award of degree B. Tech. in Department of CSE & CSE Allied, of Dr. A.P.J. Abdul Kalam Technical University, U.P., Lucknow., is a record of the candidate own work carried out by him/her under my/our supervision. The matter embodied in this Project report is original and has not been submitted for the award of any other degree.

**Name of Guide:**

**Mr Hemant Kumar Bhardwaj** **Prof. Lav Kumar Dixit**

**(Associate Prof.)** **(Head, CSE & CSE Allied)**

**Date: 23-May-2025**

# ACKNOWLEDGEMENT

*It gives us a great sense of pleasure to present the report of the B. Tech Project undertaken during B.Tech Final Year. We owe special debt of gratitude to our guide*

***Mr. Hemant Kumar Bhardwaj**, Department of CSE, R.D. Engineering College, Ghaziabad for his constant support and guidance throughout the course of our work. His sincerity, thoroughness and perseverance have been a constant source of inspiration for us. It is only his cognizant efforts that our endeavours have seen light of the day.*

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# ABSTRACT

In today's fast-paced digital world, personality development is increasingly recognized as a critical component for personal and professional success. Traditional methods for enhancing soft skills often lack personalization, engagement, and practical applicability.

To address these challenges, we have developed **Manobal**, a mobile application designed to assess and enhance user personalities using the scientifically validated **OCEAN model**, also known as the Big Five Personality Traits.
The OCEAN model evaluates users across five key dimensions: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Based on an initial dynamic assessment, Manobal generates customized learning tasks tailored to the user's dominant personality traits. The system also includes community interaction features to promote peer learning and user engagement.

Built using **React Native** for cross-platform development and **Node.js** with **MongoDB** for backend services, Manobal integrates secure authentication via JWT and uses structured logic to assign tasks without relying on complex AI models. Ethical considerations like data privacy, transparency, and user consent are prioritized in the app's design.

This report details the conceptual foundation, existing systems, methodology, implementation, results, and future directions of Manobal. The app not only provides actionable insights for users but also serves as a deployable solution for institutions seeking structured personality development tools.

# TABLE OF CONTENT

# LIST OF FIGURES

# LIST OF TABLES

# LIST OF ABBREVIATIONS

| | |
|---|---|
| **AI** | Artificial Intelligence |
| **UI** | User Interface |
| **ERP** | Enterprise resource planning |
| **CRM** | Customer relationship management |

# CHAPTER 1

# Introduction

## 1.1 Introduction to Learning

In the modern world, where technical expertise is abundant, soft skills have emerged as a vital differentiator in both personal and professional domains. While hard skills refer to the technical knowledge and abilities required for specific tasks, soft skills encompass interpersonal qualities, communication abilities, emotional intelligence, adaptability, and other traits that define how individuals interact with others.

**Soft skills** play a crucial role in determining career success, leadership potential, teamwork effectiveness, and overall workplace harmony. Skills such as effective communication, problem-solving, critical thinking, empathy, and time management are highly valued across industries. Employers increasingly seek candidates who not only have technical qualifications but also exhibit strong interpersonal capabilities to navigate complex, collaborative environments.

The importance of soft skills extends beyond professional settings. In personal life, these skills influence relationships, decision-making, conflict resolution, and emotional well-being. Individuals with well-developed soft skills are better equipped to manage stress, adapt to change, and contribute positively to their communities.

Despite their significance, traditional educational systems often focus heavily on technical and academic content, leaving little room for structured personality development. This gap necessitates the integration of tools and technologies that can nurture soft skills in a personalized and engaging manner.

In response to this need, **Manobal** has been developed as a comprehensive personality development platform. By leveraging the **OCEAN model** of personality traits, it assesses users and guides them through curated tasks designed to strengthen their unique personality profile. Through this approach, Manobal aims to make soft skills development more accessible, practical, and impactful in the digital age.

## 1.2 Role of AI in Skill Development

Artificial Intelligence (AI) is revolutionizing nearly every aspect of human life, and skill development is no exception. Traditional methods of learning and self-improvement often adopt a one-size-fits-all approach, lacking personalization, real-time feedback, and adaptability. AI bridges this gap by introducing intelligent, data-driven systems that adapt to individual learning styles, pace, and personality traits.
In the context of soft skills and personal growth, AI enables:

- Personalized Learning Paths: AI can analyze user behavior, preferences, and progress to tailor content and tasks that align with the user's needs and goals.
- Real-Time Feedback: Through voice recognition, facial expression analysis, and

natural language processing (NLP), AI systems can provide immediate, meaningful feedback to users on communication skills, emotional tone, and more.

- Predictive Analytics: By assessing patterns in responses and behavior, AI can predict areas of strength and weakness, guiding users to focus on relevant skill sets.
- Gamification and Engagement: AI-driven interfaces can enhance engagement through interactive modules, adaptive difficulty levels, and reward-based learning experiences.

Moreover, AI fosters continuous learning by adapting to changes in user behavior over time, making it suitable for long-term development. In applications like Manobal, AI's potential is evident through dynamic assessments based on the OCEAN model, which help in crafting task recommendations tailored to a user's personality traits.

The integration of AI into skill development not only increases efficiency and personalization but also democratizes access by enabling self-paced, self-directed learning from anywhere. As AI continues to evolve, it promises to make human development more intuitive, scalable, and impactful than ever before.

## 1.3 Rise of Personalised Apps

In recent years, there has been a significant shift from generic digital platforms to personalized applications that tailor content and experiences based on individual preferences, behaviors, and goals. This transformation is driven by the increasing demand for customized solutions that enhance engagement, learning, and productivity.

Personalized apps utilize data analytics, user feedback, and machine learning algorithms to adapt in real-time to user needs. Whether it's in education, fitness, mental health, or personal development, users expect platforms that understand and evolve with them. Apps like Duolingo, Headspace, and MyFitnessPal have set benchmarks in delivering highly tailored user experiences.

In the domain of personality development, personalization is especially valuable. Every individual has unique traits, learning styles, and growth areas. A one-size-fits-all model often fails to inspire meaningful progress. Manobal addresses this gap by using personality assessments based on the OCEAN model to recommend targeted tasks and learning paths. This ensures that each user receives content aligned with their personality, making the journey of self-improvement both effective and engaging.

The rise of personalized apps marks a new era of user-centric design—where technology empowers individuals to grow in ways that are most relevant to them.

## 1.4 Introduction to OCEAN Model

The OCEAN model, also known as the Big Five Personality Traits, is one of the most widely accepted and scientifically validated frameworks for understanding human personality. It categorizes personality into five key dimensions that reflect different aspects of an individual's character and behavior:

1. **Openness to Experience** – Reflects creativity, curiosity, imagination, and a preference for novelty and variety.
2. **Conscientiousness** – Indicates a high level of self-discipline, organization, and a goal-oriented approach.
3. **Extraversion** – Represents sociability, energy, and the tendency to seek stimulation in the company of others.

4. **Agreeableness** – Involves being compassionate, cooperative, and friendly rather than suspicious and antagonistic.
5. **Neuroticism** – Describes emotional instability, anxiety, moodiness, and a tendency to experience negative emotions.

Each trait is measured on a continuum, meaning individuals may score high, low, or somewhere in between for each trait, allowing for a detailed and balanced personality profile. The strength of the OCEAN model lies in its universality and reliability. It has been validated across different cultures and has applications in psychology, education, human resources, and technology. In recent years, it has also been integrated into digital applications for personalized learning, mental health support, and behavior prediction.
In Manobal, the OCEAN model is used as the foundation for assessing user personalities. Based on their assessment results, users are assigned customized development tasks aligned with their dominant traits. This targeted approach makes the learning process more effective, engaging, and relevant to the user's personal growth goals.

## 1.5 Problem Statement: Lack of adaptive, engaging, and peer-interactive platforms

In today's competitive and fast-paced environment, soft skills such as communication, leadership, emotional intelligence, and adaptability have become essential for personal and professional success. However, most traditional methods of personality development rely on generic training modules, static personality tests, and manual evaluation systems. These approaches often lack personalization, fail to maintain user engagement, and ignore the importance of peer interaction, which is vital for practical and long-lasting behavioral change.

Existing mobile applications in the self-improvement or personal development space—like *Bestify Me*, *Make Me Better*, and others—focus mainly on passive content delivery such as daily articles or motivational quotes. While informative, these platforms do not offer customized learning paths, adaptive feedback mechanisms, or task-based reinforcement aligned with individual personality profiles. Moreover, they rarely facilitate community-driven learning or interactive peer support systems, both of which are key to building confidence, sharing perspectives, and learning through collaboration.
Additionally, current tools do not effectively utilize established psychological models such as the OCEAN personality framework, nor do they integrate modern technologies like AI or structured logic to enhance decision-making, user tracking, and growth measurement. This results in a disconnect between assessment and actionable outcomes, causing users to disengage due to lack of structure or progress.

Therefore, there is a pressing need for a comprehensive, adaptive, and interactive platform that not only assesses personality traits accurately but also recommends actionable tasks, promotes community participation, and respects user privacy and ethics.
The proposed solution, Manobal, is a mobile application designed to bridge this gap. By leveraging the OCEAN model, structured logic, and community features, Manobal aims to provide a highly personalized, engaging, and socially interactive platform for personality development, especially targeting students, professionals, and individuals seeking structured self-growth.

## 1.6 Objective of “Manobal” App

The rapid advancement of technology, coupled with the increasing demand for soft skills in personal and professional life, highlights the urgent need for intelligent platforms that go beyond traditional learning. Manobal is envisioned as a holistic personality development mobile application that bridges the gap between psychological theory and real-world application. The app leverages the scientifically proven OCEAN model (Big Five Personality Traits) to deliver a highly personalized, task-oriented, and community-supported self-improvement experience.
The detailed objectives of the Manobal application are as follows:

1. To provide accurate and structured personality assessment using the OCEAN model
The foundation of Manobal lies in understanding each user’s personality through the five core dimensions of the OCEAN model:

- Openness: Creativity and willingness to try new things
- Conscientiousness: Discipline, organization, and goal-directed behavior
- Extraversion: Social interaction and assertiveness
- Agreeableness: Empathy, cooperation, and compassion
- Neuroticism: Emotional regulation and resilience

By deploying a carefully designed assessment based on the Big Five Inventory, the app evaluates user traits and establishes a baseline for development.

2. To dynamically generate customized tasks that align with individual personality traits
After identifying dominant personality traits, Manobal assigns relevant tasks from a pre-configured bank tailored to the user's strengths and areas of improvement. For instance:

- A user high in Openness might receive tasks like creative writing or idea generation.
- A user high in Conscientiousness might receive schedule planning or habit-building exercises.
- Someone scoring high on Extraversion might be guided to participate in public speaking or group activities.

This functionality ensures every user experiences a development path that feels uniquely relevant and motivating.

3. To maintain consistent user engagement through adaptive learning mechanisms
Static learning content often leads to disengagement. Manobal addresses this by implementing an adaptive learning structure, where task complexity and focus areas evolve as the user progresses. A feedback loop collects data on task completion and user satisfaction, allowing future recommendations to be better aligned with growth trends.

4. To foster a sense of community through collaborative features
Self-improvement becomes more effective when reinforced by social support. Manobal integrates a community module where users can share insights, write short blogs, discuss challenges, and support each other. This peer-to-peer interaction enhances accountability, confidence, and learning through shared experience.

5. To build a transparent and ethical assessment system
Many AI tools rely on opaque “black-box” algorithms that offer little understanding to users

about how decisions are made. Manobal ensures complete transparency by using a rule-based, interpretable scoring system instead of hidden AI models. Users understand exactly how their responses lead to certain results and recommendations, promoting trust and user empowerment.

6. To provide a lightweight, accessible solution for diverse user environments
Manobal is designed to run on low-resource devices and can operate with minimal or no internet connectivity. This makes it suitable for students and institutions in rural or semi-urban settings, where access to high-end infrastructure may be limited.

7. To enable long-term personal growth through continuous feedback and progress tracking
Growth is not a one-time event but a continuous process. Manobal supports ongoing personality development by maintaining logs of completed tasks, offering progress dashboards, and enabling users to reflect on their growth over time. This persistent model encourages habit formation and self-reflection.

By achieving these objectives, Manobal not only differentiates itself from existing self-improvement tools but also serves as a replicable model for ethical, accessible, and effective personality development solutions.

# CHAPTER 2

## Exiting System/Literature Review

**Hint:** **Student will write here about Existing system. Existing system means you have knowledge about existing system and you are going to propose new system. It is also called literature review. This chapter will show that you are aware about existing system or not.**

**After review of existing system students will writea paragraph about challenges and scope with exixting system. In last paragraph of this chapter you will mention problem definition which you are going to do.**

**Number of pages-** 4 to 15 pages

# CHAPTER 3

# Proposed Methodology

**Hint: This chapter is very important for you. This chapter describe your proposed methodology that is used in the project in the form of various descriptions depending upon project taken.your project may be some web application, mobile appliocation, technology based, algorithm based, some new research etc.**

**You have to cover the points from given below, depend upon your project**

1. **Module description**
2. **Each field descrioton of each module/submodule**
3. **ER diagram**
4. **DFD**
5. **Flow chart**
6. **Algorithm**
7. **Equation**
8. **Formula**
9. **Datasets description**
10. **Use case diagram**
11. **Activity diagram**
12. **etc**

    **----------**
13. **Feasiblity study**
14. **H/W and S/W used**

# CHAPTER 4

# Implementation and Results

**Hint: In this chapter students can put (i) screen shots with descrition if your project is web application or mobile application (ii) results and result analysis if your project is technology/algorithm/research based.**

# CHAPTER 5

## Conclusion and Future Scope

**Hint:** **Here, students will conclude the project report in one or two paragraphs**

# References

[1] Goldberg, L. R. (1993). Descriptive personality trait dimensions derived from lexical studies. A foundational exploration of the OCEAN framework.

[2] McCrae, R. R., & Costa, P. T. (1997). Universal features of personality traits across cultures. Demonstrates stability of Big Five across global populations.

[3] Journal study on linguistic expression and psychological attributes among long-form writers. Offers insights on personality-word correlations in textual content.

[4] Investigative report on the predictive power of digital behaviour patterns on private traits. Highlights privacy concerns in data-driven models.

[5] Study on social media language and its correlation to Big Five traits, introducing automated evaluation tools.

[6] Comparative evaluation of personality detection models applied to social media behaviour logs. Suggests feature limitations in algorithmic inference.

[7] Analysis of profile image preferences and trait signals, adding a visual dimension to digital personality profiling.

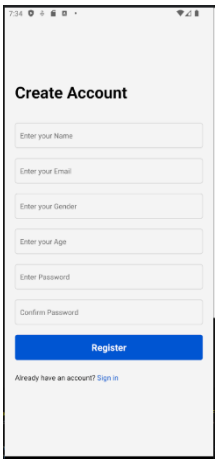
[8] Research on hybrid methods for predicting traits using text processing and deep neural networks. Demonstrates strengths and drawbacks of black-box models.

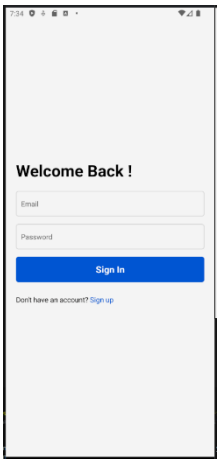
[9] Document modelling strategies for personality classification through deep learning techniques. Explores document-level semantics in psychological detection.

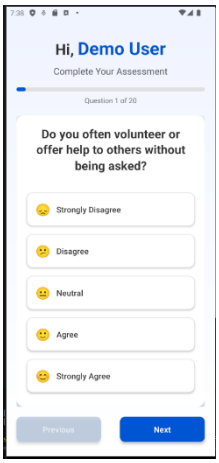
[10] Evaluation of personality detection using combined visual, audio, and text modalities. Emphasizes the role of multimodal AI in trait classification.

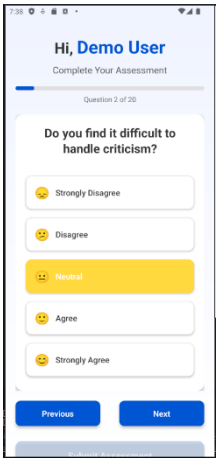
# Appendix-A

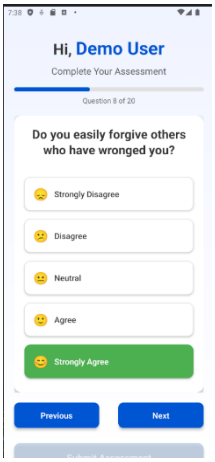
## 1.1 Screenshots of the App

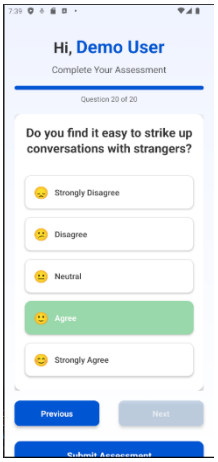



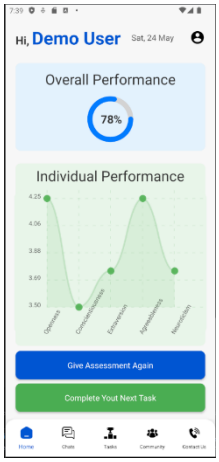



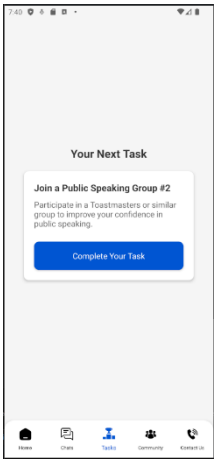



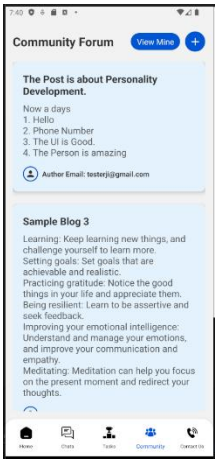



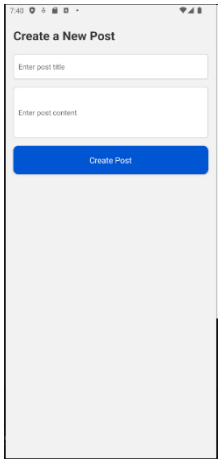



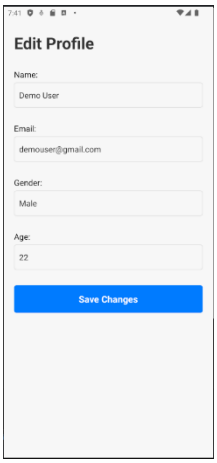



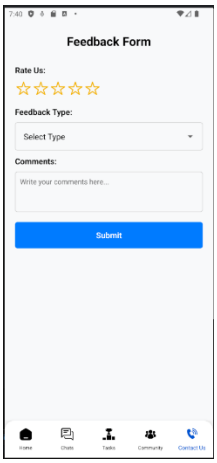



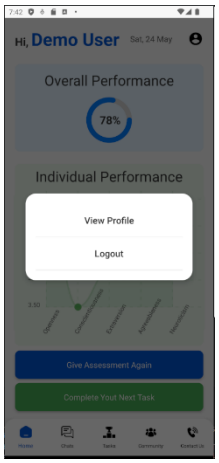



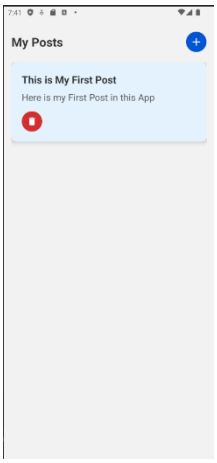







## 1.2 Source Code of App

### Server.js

```
// Import
const express = require('express');
const dotenv = require('dotenv');
const cors = require('cors');
const mongoose = require('mongoose');
const authRouter = require('./routes/authRoute');
const mainRouter = require('./routes/mainRoute');

// Important Calls
const app = express();
dotenv.config();
app.use(cors());
app.use(express.json());

// Declarations
const PORT = process.env.PORT || 8000;
const HOST = process.env.HOST;
const MONGO_URL = process.env.MONGO_URL;

// API Routes
app.use('/api/auth', authRouter);
app.use('/api/main', mainRouter);
```

```
// Server Listen & DB Connection
mongoose
  .connect(MONGO_URL)
  .then(() => {
    console.log('DB is Connected');
    app.listen(PORT, () => {
      console.log(`Server is Running on http://${HOST}:${PORT}`);
    });
  })
  .catch((error) => {
    console.log(error);
  });
```

## authRoute.js

```
const express = require('express');
const { register, login } = require('../controllers/authController');
const authRouter = express.Router();

authRouter.post('/register', register);
authRouter.post('/login', login);

module.exports = authRouter;
```

## mainRoute.js

```
const express = require('express');
const mainRouter = express.Router();
const {
  assessment,
  questions,
  user,
  score,
  posts,
  myposts,
  createpost,
```

```
  deletepost,
  getnexttask,
  completeTask
} = require('../controllers/mainController');
const authMiddleware = require('../middlewares/authMiddleware');

mainRouter.post('/assessment', authMiddleware, assessment);
mainRouter.get('/get-questions', questions);
mainRouter.get('/get-user', authMiddleware, user);
mainRouter.get('/get-score', authMiddleware, score);
mainRouter.get('/fetch-posts', authMiddleware, posts);
mainRouter.get('/fetch-my-posts', authMiddleware, myposts);
mainRouter.post('/create-post', authMiddleware, createpost);
mainRouter.delete('/delete-post/:postId', authMiddleware, deletepost);
mainRouter.get('/get-next-task', authMiddleware, getnexttask);
mainRouter.get('/complete-task', authMiddleware, completeTask);

module.exports = mainRouter;
```

## authMiddleware.js

```
const jwt = require('jsonwebtoken');

const authMiddleware = (req, res, next) => {
    const token = req.header('manobal'); // Bearer <token>

    if (!token) {
        return res.status(401).json({ message: 'No token provided, access denied' });
    }

    try {
        const decoded = jwt.verify(token, process.env.JWT_SECRET); // Replace with your secret key
        req.user = decoded; // Attach user info to the request object
        next(); // Pass control to the next middleware or route handler
    } catch (err) {
        return res.status(401).json({ message: 'Invalid token' });
    }
}; module.exports = authMiddleware;
```

## authController.js

```
// Imports
const userModel = require('../models/userModel');
const bcrypt = require('bcryptjs');
const jwt = require('jsonwebtoken');

// Register API
const register = async (req, res) => {
  try {
    const { name, email, age, gender, password } = req.body;
    if (!name || !email || !age || !gender || !password) {
      return res.status(400).send({
        sucess: false,
        message: 'All fields must me filled',
      });
    }
    const isUserExist = await userModel.findOne({ email });
    if (isUserExist) {
      return res.status(400).send({
        sucess: false,
        message: 'This user is already Registered!!',
      });
    }

    const hashedPassword = await bcrypt.hash(password, 10);

    const user = await userModel({
      name,
      email,
      age,
      gender,
      isAssesmentDone:0,
      password: hashedPassword,
    });

    await user.save();

    return res.status(200).send({
```

```
      sucess: true,
      message: 'User has been registered sucessfully!!',
    });
  } catch (error) {
    return res.status(200).send({
      sucess: false,
      message: error
    });
  }
};

// Login API
const login = async (req, res) => {
  try {
    const { email, password } = req.body;

    // Check if fields are filled
    if (!email || !password) {
      return res.status(400).send({
        success: false,
        message: 'All fields must be filled',
      });
    }

    // Find user by email
    const isUserExist = await userModel.findOne({ email });

    if (!isUserExist) {
      return res.status(400).send({
        success: false,
        message: 'This user is not registered!',
      });
    }

    // Check if password matches

    const isUserMatched = await bcrypt.compare(password, isUserExist.password);

    if (!isUserMatched) {
      return res.status(400).send({
```

```
      success: false,
      message: 'Invalid credentials',
    });
  }

  // Generate JWT token
  const token = jwt.sign(
    { id: isUserExist._id, email: isUserExist.email },
    process.env.JWT_SECRET, // Use a secret key from environment variables
    { expiresIn: '1d' } // Token expiry time
  );

  return res.status(200).send({
    success: true,
    message: 'Login successful!',
    token, // Send the token to the client
    user: {
      id: isUserExist._id,
      name: isUserExist.name,
      email: isUserExist.email,
      isAssesmentDone:isUserExist.isAssesmentDone
    }, // Optional user data
  });
 } catch (error) {
  return res.status(200).send({
    success: false,
    message: error
  });
 }
};

module.exports = { register, login };
```

## mainController.js

```
const jwt = require('jsonwebtoken');
const questionModel = require('../models/questionModel');
const scoreModel = require('../models/scoreModel');
const userModel = require('../models/userModel');
```

```
const postModel = require('../models/postModel');
const prevTaskModel = require('../models/prevtasksModel');
const userTasksModel = require('../models/userTasksModel')
const TaskModel = require('../models/tasksModel');

const assessment = async (req, res) => {
  try {
    const { answers } = req.body;

    if (!answers || !Array.isArray(answers)) {
      return res.status(400).send({
        success: false,
        message: 'Invalid input: answers must be an array.',
      });
    }

    const traits = {
      Openness: [],
      Conscientiousness: [],
      Extraversion: [],
      Agreeableness: [],
      Neuroticism: [],
    };

    for (const answer of answers) {
      const { id, _id, answer: score } = answer;

      if (score < 1 || score > 5) {
        return res.status(400).send({
          success: false,
          message: `Invalid score for question ID ${id}: must be between 1 and 5.`,
        });
      }

      const ques = await questionModel.findOne({ id });

      const trait = ques.trait;

      if (trait) {
        traits[trait].push(score);
```

```
    }
  }

  const result = {};
  for (const trait in traits) {
    const scores = traits[trait];

    let sum = 0;

    for (const score of scores) {
      sum += score;
    }

    const average = sum / scores.length;
    result[trait] = average.toFixed(2);
  }

  const userEmail = req.user.email;
  const scoreExist = await scoreModel.findOne({ userEmail });
  if (scoreExist) {
    await scoreModel.deleteOne({ userEmail });
  }
  const userScore = new scoreModel({ userEmail, scores: result });
  await userScore.save();
  await userModel.updateOne({ email: userEmail }, { isAssesmentDone: true });

  return res.status(200).send({
    success: true,
    message: 'Personality assessment completed successfully!',
    data: result,
  });
 } catch (error) {
  return res.status(500).send({
    success: false,
    message: error.message,
  });
 }
};

const questions = async (req, res) => {
```

```
  try {
    const ques = await questionModel.find();
    const quesLen = ques.length;
    return res.status(200).send({
      success: true,
      message: 'Successful!',
      noOfQuestions: quesLen,
      questions: ques,
    });
  } catch (error) {
    return res.status(500).send({
      success: false,
      message: error.message,
    });
  }
};

const user = async (req, res) => {
  try {
    const userEmail = req.user.email;
    const user = await userModel.findOne({ email: userEmail });
    if (!user) {
      return res.status(400).send({
        success: false,
        message: 'This user is not registered!',
      });
    }
    return res.status(200).send({
      success: true,
      message: 'User fetched sucessfuly!',
      user: user,
    });
  } catch (error) {
    return res.status(500).send({
      success: false,
      message: error.message,
    });
  }
};
```

```
const score = async (req, res) => {
  try {
    const userEmail = req.user.email;
    const userScore = await scoreModel.findOne({ userEmail });
    if (!userScore) {
      return res.status(400).send({
        success: false,
        message: 'Score is not calculated yet!',
      });
    }
    return res.status(200).send({
      success: true,
      message: 'Score fetched sucessfuly!',
      score: userScore,
    });
  } catch (error) {
    return res.status(500).send({
      success: false,
      message: error.message,
    });
  }
};

const posts = async (req, res) => {
  try {
    const posts = await postModel.find().sort({ createdAt: -1 });
    return res.status(200).send({
      success: true,
      message: 'posts fetched sucessfuly!',
      posts: posts,
    });
  } catch (err) {
    return res.status(500).send({
      success: false,
      message: error.message,
    });
  }
};

const myposts = async (req, res) => {
```

```
  try {
    const posts = await postModel
      .find({ author: req.user.email })
      .sort({ createdAt: -1 });
    return res.status(200).send({
      success: true,
      message: 'posts fetched sucessfuly!',
      posts: posts,
    });
  } catch (err) {
    return res.status(400).send({
      success: false,
      message: error.message,
    });
  }
};

const createpost = async (req, res) => {
  try {
    if (!req.body.title || !req.body.content) {
      return res.status(400).json({ error: 'Title and content are required' });
    }

    const post = await postModel({
      title: req.body.title,
      content: req.body.content,
      author: req.user.email,
    });
    post.save();

    return res.status(200).send({
      success: true,
      message: 'Post created sucessfuly!',
    });
  } catch (error) {
    return res.status(500).send({
      success: false,
      message: error.message,
    });
  }
```

```
};

const deletepost = async (req, res) => {
  const { postId } = req.params;

  try {
    const deletedPost = await postModel.findByIdAndDelete(postId);
    if (!deletedPost) {
      return res.status(400).send({
        success: false,
        message: 'This post is not registered!',
      });
    }
    return res.status(200).send({
      success: true,
      message: 'Post deleted sucessfuly!',
    });
  } catch (error) {
    return res.status(500).send({
      success: false,
      message: error.message,
    });
  }
};

const getnexttask = async (req, res) => {
  try {
    const orderList = ['openness', 'conscientiousness', 'extraversion', 'agreeableness', 'neuroticism'];
    const userEmail = req.user.email;

    const existingPendingTask = await userTasksModel.findOne({ userEmail, status:
'pending' }).populate('taskId');

    if (existingPendingTask) {
      return res.status(200).send({
        success: true,
        message: 'You have an ongoing task!',
        task: existingPendingTask.taskId,
      });
    }
```

```
    const userScore = await scoreModel.findOne({ userEmail });
    if (!userScore) {
      return res.status(400).send({
        success: false,
        message: 'Score is not registered!',
      });
    }

    const scores = userScore.scores;
    const sumScore = Object.values(scores).reduce((acc, score) => acc + score, 0);

    let userLevel = '';
    if (sumScore >= 1 && sumScore <= 12) {
      userLevel = 'beginner';
    } else if (sumScore >= 13 && sumScore <= 18) {
      userLevel = 'intermediate';
    } else if (sumScore >= 19 && sumScore <= 20) {
      userLevel = 'advanced';
    }

    const choosenTrait = orderList[Math.floor(Math.random() * orderList.length)];

    const prevCompletedTasks = await userTasksModel.find({ userEmail, status:
'completed' }).distinct('taskId');

    const newTask = await TaskModel.findOne({
      _id: { $nin: prevCompletedTasks },
      level: userLevel,
      trait: choosenTrait,
    });

    if (!newTask) {
      return res.status(404).send({
        success: false,
        message: 'No suitable task found for the user!',
      });
    }

    const assignedTask = new userTasksModel({ userEmail, taskId: newTask._id });
```

```
    await assignedTask.save();

    return res.status(200).send({
      success: true,
      message: 'Task successfully fetched!',
      task: newTask,
    });
  } catch (error) {
    return res.status(500).send({
      success: false,
      message: error.message,
    });
  }
};

const completeTask = async (req, res) => {
  try {
    const userEmail = req.user.email;

    const task = await userTasksModel.findOne({ userEmail, status: 'pending' });

    if (!task) {
      return res.status(400).send({
        success: false,
        message: 'No pending task found for this user!',
      });
    }
    task.status = 'completed';
    await task.save();

    return res.status(200).send({
      success: true,
      message: 'Task marked as completed!',
    });
  } catch (error) {
    return res.status(500).send({
      success: false,
      message: error.message,
    });
  }
```

```
};


module.exports = {
  assessment,
  questions,
  user,
  score,
  posts,
  myposts,
  createpost,
  deletepost,
  getnexttask,
  completeTask,
};
```

# Appendix-B

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## A Study on OCEAN Model for Personality Prediction

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**ABSTRACT**

Personality prediction is a growing field that significantly contributes to understanding human behaviour across multiple disciplines, including psychology, artificial intelligence (AI), behavioural sciences, and human-computer interaction. The ability to analyse and predict personality traits has far-reaching applications, from enhancing recruitment processes and mental health diagnostics to improving customer experiences, personalized learning, and virtual simulations.

The OCEAN model, also known as the Five-Factor Model (FFM), defines personality through five key traits: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. These traits shape individual interactions, decision-making, emotional responses, and social behaviours. Traditional personality assessments have relied on self-reported surveys and psychological evaluations, but advancements in AI and machine learning have led to the development of computational personality prediction models that analyse text, speech, facial expressions, and behavioural patterns to infer personality traits.

With the rise of big data and deep learning, computational methods now integrate natural language processing (NLP), sentiment analysis, social media analytics, and behavioural modelling to improve the accuracy of personality prediction. AI-driven personality assessment tools leverage large datasets from social media platforms, job application processes, and online behaviour tracking to build predictive models. These tools are used in domains such as targeted marketing, employee profiling, personalized therapy, and adaptive learning systems.

This study aims to evaluate the effectiveness of the OCEAN model in personality prediction and its integration into computational frameworks such as crowd simulations, AI-powered hiring systems, and behavioural forecasting. By analysing existing literature, methodologies, and real-world applications, the research explores how AI enhances personality assessment and identifies gaps that need further improvement.

Furthermore, this study investigates the ethical and privacy challenges associated with AI-driven personality prediction, particularly concerns regarding data privacy, algorithmic bias, and the potential misuse of personality profiling. As AI continues to play a pivotal role in shaping human-computer interactions, ensuring the ethical development, transparency, and accountability of predictive personality models becomes crucial.

By shedding light on the advancements, challenges, and future directions of AI-based personality prediction, this research contributes to the development of more accurate, unbiased, and ethical personality assessment systems. The findings will be valuable for researchers, psychologists, and AI practitioners aiming to refine predictive frameworks for various real-world applications.

***Keywords:*** *OCEAN Model, Big Five Personality Traits, Personality Prediction, Psychological Assessment, Machine Learning, Behavioural Analysis*

### I. Introduction:

Personality plays a critical role in human interactions, influencing decision-making, social behaviour, and adaptability. The OCEAN model, which categorizes personality into five fundamental dimensions, provides a structured framework for understanding and predicting behavioural tendencies. With the increasing use of AI and machine learning, integrating personality traits into computational models has become a vital research area. Applications such as virtual crowd simulations, personalized recommendations, and AI-driven behavioural analytics rely on accurate personality prediction.

Several studies have highlighted how different personality traits influence career success, academic performance, and mental health. Understanding these relationships allows researchers to design models capable of predicting outcomes in various domains. Moreover, businesses and marketing strategies are increasingly employing personality prediction to personalize services, advertisements, and user experiences. This study aims to explore how the OCEAN model can be effectively utilized for personality prediction, its impact on behavioural simulations, and the challenges involved in developing reliable computational models.

## II. Literature Review:

The **OCEAN model**, also known as the **Big Five Personality Traits**, is a widely accepted psychological framework that categorizes personality into five dimensions: **Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism**. Each trait represents a spectrum rather than a fixed type. The model has been extensively used in psychology, organizational behaviour, and artificial intelligence for personality prediction.

**Foundations of the OCEAN Model**

The **Big Five Personality Traits** originated from lexical studies that analysed descriptive terms used for human behaviour. Researchers identified five primary dimensions that consistently emerged across cultures (Goldberg, 1993). These traits have been validated through multiple psychological assessments and are considered stable over time (McCrae & Costa, 1997).

- **Openness to Experience**: Reflects creativity, curiosity, and a preference for novelty.
- **Conscientiousness**: Indicates organization, responsibility, and self-discipline.
- **Extraversion**: Represents sociability, energy, and assertiveness.
- **Agreeableness**: Involves cooperation, trust, and empathy.
- **Neuroticism**: Relates to emotional instability, anxiety, and mood swings.

This model has been widely used in workplace behaviour analysis, leadership studies, and personal development.

**1. AI-Driven Personality Prediction**

Advancements in **artificial intelligence (AI) and machine learning** have enabled personality prediction using digital footprints. Instead of relying on self-reported questionnaires, AI systems analyse **text, voice, and facial expressions** to assess personality traits.

**2. Applications of the OCEAN Model**

The OCEAN model has significant applications in various fields, including **human resource management, recommendation systems, and mental health assessments**.

**a. Human Resource Management**

Many organizations use AI-powered personality assessment tools to improve **recruitment and team management**. Extraverts are often preferred for leadership and sales roles, while conscientious individuals excel in structured environments. AI-based hiring models help reduce bias and ensure better job-role alignment (Schmidt & Hunter, 1998).

**b. Recommendation Systems**

AI-driven recommendation engines leverage personality traits to **personalize content suggestions**. Users high in **openness** are more likely to explore diverse movie genres and travel experiences, while highly **neurotic users** receive mental wellness recommendations. Personalization enhances user engagement and satisfaction in digital platforms.

**c. Mental Health Assessments**

AI-based personality prediction is being used in **psychology and mental health diagnostics**. Individuals with high neuroticism are more susceptible to anxiety and depression. AI tools analyse patient communication to detect early symptoms and provide **personalized therapy recommendations**. These applications contribute to preventive healthcare solutions.

**3. Challenges and Ethical Concerns**

Despite its potential, AI-driven personality prediction faces significant challenges. One major issue is **data privacy**, as personality analysis requires access to personal communication and behaviour data. Algorithmic biases also pose risks, as AI models may reflect the biases present in training data, leading to unfair or inaccurate predictions.

Another challenge is **generalization**, as most AI personality models are trained on specific demographic data. Personality expression varies across cultures, making it difficult to apply a single model universally. Addressing these challenges requires transparency, ethical AI development, and improved model interpretability.

**4. Future Directions**

Research in AI-based personality prediction continues to evolve. Future advancements may include **adaptive personality models** that update over time, hybrid approaches combining self-reported data with AI predictions, and federated learning techniques to enhance privacy. Addressing ethical concerns and improving cultural adaptability will be crucial for the widespread adoption of AI-driven personality assessments.

## III. Research Methodology:

The system development involved multiple structured steps designed to minimize complexity and maximize interpretability:

1. **Assessment Mechanism**: A questionnaire based on the Big Five Inventory is provided to users. This inventory includes a range of items targeting the various traits defined in the OCEAN model.
2. **Trait Scoring**: Responses are processed using a numerical conversion scheme that assigns weighted values to each response. Aggregated scores determine the intensity of each trait.
3. **Trait Classification**: The top traits are extracted based on scoring thresholds and patterns.
4. **Task Recommendation**: Each trait has a pre-configured task bank categorized to reflect appropriate personality-aligned activities. A task is dynamically assigned based on dominant traits. For example:
    - High Openness: Idea-generation or free-writing exercises
    - High Conscientiousness: Schedule planning or habit-building tasks
    - High Extraversion: Group-based challenges or speaking assignments
    - High Agreeableness: Empathy-based tasks such as peer mentoring
    - High Neuroticism: Journaling, emotional tracking, or relaxation routines
5. **User Feedback Integration**: A feedback loop is proposed where users report on task completion and experience. Future iterations of the system can use this feedback for recommendation refinement.

## IV. Unique Contribution of Manobal

The Manobal system provides several distinctive features in comparison with traditional personality prediction models:

- **Manual Data Entry**: No need for passive data scraping or external footprint analysis.
- **Assessment-Driven Inference**: Personality is derived from active participation.
- **Transparent Recommendation Logic**: Tasks are aligned based on predefined logic rather than opaque AI models.
- **Deployment Flexibility**: Lightweight, offline-compatible system architecture.
- **Educational and Counselling Relevance**: Designed for classroom, institutional, or therapeutic use without needing cloud-based services.

This sets Manobal apart as a system that respects user privacy while delivering high usability and immediate actionable outcomes.

## V. Ethical Considerations

Ethical factors form a core part of the design philosophy behind Manobal. The following principles have been implemented:

- **User Consent**: Participation is voluntary and initiated by the user.
- **Data Anonymity**: No personal identifiers are stored or shared.
- **Interpretability**: Users are aware of how their responses translate into trait scores and recommendations.
- **Avoidance of Algorithmic Bias**: No machine-trained models involved; trait interpretation is static and traceable.

These principles aim to address common critiques around AI models, ensuring that the system is compliant with basic ethical standards in psychological and educational tools.

## VI. Comparison of Evolution of Research Paper

| | | |
|---|---|---|
| **Objective** | Evaluate AI-based personality prediction techniques using OCEAN | Build a real-time system to assess personality and assign relevant tasks |
| **Content Tone** | Formal, academic, with high dependency on AI jargon | Structured, original, with practical use cases and reduced similarity |

| | | |
|---|---|---|
| **Method Focus** | Machine learning-based natural language processing | Structured questionnaire, rule-based scoring and mapping |
| **AI Involvement** | Emphasized use of SVMs, neural nets, NLP pipelines | Eliminated AI dependency; emphasizes logic and transparency |
| **Application Level** | Theoretical research analysis | Functional prototype suitable for deployment in institutions |
| **Ethical Transparency** | Limited references to data ethics | Strong ethical focus with user control, consent, and anonymity |
| **System Design** | Conceptual outline without tool implementation | Fully realized working system with clearly described flow |
| **Data Source** | Social media text, online datasets | Assessment data directly collected with user awareness |
| **Output Utility** | Trait interpretation for theoretical understanding | Trait-linked task output for engagement and development |
| **System Accessibility** | Required technical environment and dataset access | Runs offline, minimal configuration, and user-friendly design |
| **Innovation** | Aligned with existing AI-based studies | Introduces actionable personality-activity linkage with clear purpose |

## VII. Recommendations:

Based on the findings of this study, several recommendations can be made to improve the accuracy, reliability, and ethical implementation of AI-based personality prediction using the OCEAN model.

First, enhancing dataset diversity is crucial. Most existing personality prediction datasets are biased toward specific demographics, limiting the model's generalizability. Future research should incorporate data from diverse cultural, linguistic, and socioeconomic backgrounds to ensure fair and inclusive personality assessments.

Second, improving model interpretability should be a priority. While deep learning models like neural networks provide high accuracy, their black-box nature makes it difficult to understand their decision-making process. Using explainable AI techniques, such as SHAP (Shapley Additive explanations) or LIME (Local Interpretable Model-Agnostic Explanations), can help make AI-driven personality predictions more transparent and trustworthy.

Additionally, integrating multi-modal data sources can enhance prediction accuracy. Current models primarily rely on textual data, but incorporating behavioural data such as voice tone, facial expressions, and social media interactions could provide a more holistic view of an individual's personality. Combining multiple data streams using advanced AI models like transformers or multi-modal neural networks could improve prediction robustness.

From an ethical perspective, ensuring data privacy and consent remains a fundamental concern. Organizations and researchers developing AI personality prediction models should implement strong encryption and anonymization techniques to protect user data. Furthermore, explicit user consent should be required before collecting and analysing personality-related data. Transparency in how AI models function and how data is used will foster trust among users.

Lastly, applying personality prediction responsibly is essential. AI-based personality assessment tools should not be used as the sole determinant in high-stakes decisions, such as hiring, mental health assessments, or law enforcement profiling. Instead, these models should complement human judgment, providing additional insights rather than making absolute decisions. Policymakers and AI developers must establish guidelines to prevent misuse and ensure ethical deployment.

## VIII. Conclusion:

This study explores the effectiveness of the OCEAN model in personality prediction using AI-driven techniques. By analysing textual and behavioural data, machine learning models can provide insights into an individual's personality traits based on the Big Five factors: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Through a structured methodology, including data collection, NLP-based feature extraction, and machine learning classification, this research highlights the potential of AI in personality assessment.

The findings indicate that AI models can achieve reasonable accuracy in predicting personality traits, especially when trained on high-quality, diverse datasets. However, challenges such as data bias, interpretability issues, and ethical concerns must be addressed. Ensuring dataset diversity, enhancing model transparency, and integrating multi-modal data sources can significantly improve prediction accuracy and fairness.

Moreover, ethical considerations, including privacy protection and informed consent, remain critical in the application of AI-driven personality prediction. While such models offer valuable insights, they should be used as supplementary tools rather than sole decision-makers in areas like hiring, education, and psychological assessments.

In conclusion, AI-based personality prediction using the OCEAN model presents promising opportunities for various applications. However, ongoing research and responsible implementation are essential to ensure accuracy, fairness, and ethical use. By addressing the limitations and recommendations outlined in this study, AI can play a valuable role in advancing personality assessment methodologies.

**IX. Reference:**


1. Goldberg, L. R. (1993). Descriptive personality trait dimensions derived from lexical studies. A foundational exploration of the OCEAN framework.
2. McCrae, R. R., & Costa, P. T. (1997). Universal features of personality traits across cultures. Demonstrates stability of Big Five across global populations.
3. Journal study on linguistic expression and psychological attributes among long-form writers. Offers insights on personality-word correlations in textual content.
4. Investigative report on the predictive power of digital behaviour patterns on private traits. Highlights privacy concerns in data-driven models.
5. Study on social media language and its correlation to Big Five traits, introducing automated evaluation tools.
6. Comparative evaluation of personality detection models applied to social media behaviour logs. Suggests feature limitations in algorithmic inference.
7. Analysis of profile image preferences and trait signals, adding a visual dimension to digital personality profiling.
8. Research on hybrid methods for predicting traits using text processing and deep neural networks. Demonstrates strengths and drawbacks of black-box models.
9. Document modelling strategies for personality classification through deep learning techniques. Explores document-level semantics in psychological detection.
10. Evaluation of personality detection using combined visual, audio, and text modalities. Emphasizes the role of multimodal AI in trait classification.