AI-Powered Productivity Tracker

# Abstract

With the rise of digital distractions, students and professionals often struggle to maintain productivity. This project presents an AI-based system that classifies daily screen time into productive and non-productive categories using machine learning. A dataset containing app usage, time spent, and manually labeled productivity outcomes was created. A Random Forest Classifier was trained to recognize usage patterns and predict whether the time spent was useful or wasted. The model achieved over 85% accuracy on the test data. A simple interface visualizes daily productivity and provides improvement suggestions. This project applies AI to solve a real-world problem—helping users understand and improve their digital habits.

# 1. Introduction

In the digital age, people often spend hours on apps like YouTube, Instagram, or games without realizing how much time is lost. This project aims to build an intelligent tracker that analyzes your screen time and tells you how much was productive versus wasted. The goal is to help people, especially students, stay focused and manage their time better using machine learning.

# 2. Problem Statement

How can we automatically detect whether someone is wasting time or being productive based on their app usage? Can AI classify these behaviors and help users improve?

# 3. Tools & Technologies Used

- Python  
- pandas, scikit-learn for data analysis and machine learning  
- matplotlib for charts and visualizations  
- Google Colab for cloud-based coding

# 4. Dataset Creation

Since public datasets were not available, I created a dataset manually. The dataset includes:  
- App Name (e.g., YouTube, Google Docs)  
- Time Spent (minutes)  
- Category (e.g., Study, Entertainment)  
- Label: 1 = Productive, 0 = Not productive

# 5. Machine Learning Model

I used the Random Forest Classifier from scikit-learn.  
Steps:  
- Encoded the Category text into numbers  
- Split the data into 80% training and 20% testing  
- Trained the model to classify whether the app usage is productive or not  
- Tested the model’s accuracy using accuracy\_score  
  
Result: ~85–90% accuracy with a small dataset

# 6. Prediction System

Once trained, the model could take new input (like 100 minutes on Chrome) and say:  
- “Productive” (if used for study or work)  
- “Not Productive” (if entertainment or social media)

# 7. Visualization

I used a pie chart to show how much time was:  
- Productive  
- Not Productive  
This helps users quickly understand their daily balance.

# 8. Suggestions System (Basic)

If time on apps like Instagram or YouTube > 60 minutes, it recommends:  
- "Limit YouTube to 30 mins"  
- "Try replacing Instagram time with a walk"  
More suggestions can be added in future.

# 9. Limitations

- Small dataset (manually created)  
- Can't track real apps yet — just a demo  
- Manual labeling of productivity (can be automated)

# 10. Future Improvements

- Track apps in real-time using a browser extension  
- Connect with phone or computer logs  
- Add a Streamlit UI to make it a working web app  
- Personalized suggestions using AI

# 11. Conclusion

This project shows how AI can be used to solve everyday problems. By training a model on app usage data, we can predict whether a person is using their time wisely. It helps bring awareness and builds better digital habits using data and machine learning.

# 12. References

- scikit-learn documentation  
- matplotlib documentation  
- Kaggle (for ML ideas)  
- Google Colab