Internship Report

On

("Student Productivity & Sleep Behavior Analysis using Machine Learning")

Submitted by
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24105150025
Government Engineering College, Madhubani

Submitted to
Mallika Srivastava
Head, Training Delivery
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&
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Head, Internships & Trainings
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Student's Declaration

I, Sonakshi Sonam, a student of B.Tech program, Roll No. 24105150025 of the Department of Computer Science & Engineering, Government Engineering College Madhubani College do hereby declare that I have completed the mandatory internship in Eisystems Technologies under the faculty guideship of Gautam Kumar, Department of Computer Science & Engineering, Government Engineering College Madhubani.

Sonakshi Sonam
07.012026

(Signature and Date)

Endorsements

SIGNATURE
Gautam Kumar
Computer Science & Engineering
Government Engineering College Madhubani

SIGNATURE
Anand Kamal
Computer Science & Engineering
Government Engineering College Madhubani

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Nomenclature / Notations (if any)

Serial No	Notations	Description
1	X	Input features used for model training.
2.	y	Output variable
3.	df	Dataset loaded using Pandas DataFrame
4.	Sleep_Model	Trained machine learning model for sleep quality prediction
5.	Productivity_Model	Trained machine learning model for productivity prediction
6.	Sleep_pred	Predicted sleep quality value
7.	prod_pred	Predicted productivity score

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Executive Summary

This internship focused on learning the fundamentals of Machine Learning using Python. During the training phase, I learned data handling using Numpy (for Numerical Data) and Pandas (for Tabular Data), data visualization using Matplotlib, and basic Machine Learning concept using Scikit-learn.

As a part of the project phase, I developed a machine Learning model to analyze student sleep behaviour and productivity based on daily habits. The project helped me understand how real-life data can be used to make predictions.

Through this internship, I improved my practical coding skills, understanding of machine learning workflow, and gained experience in deploying a model using Streamlit.

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Overview of Organization

About EISystems

India's leader in workshops & trainings at IITs, NITs & top engineering colleges.

EISystems Services is a leading Indian technology identity with operations across India. EISystems (We call it EISys) offers trainings in Cybersecurity, Machine Learning, Automobiles, Internet of Things, Robotics and Socialmedia for enterprises and student community. Till date we have trained approximately 50000 students and impacted around 2 lakhs students through our various outreach initiatives since our founding.

Our Presence

Some of the colleges where we had already felt our presence are given below:-

Indian Institute of Science, Bangalore
Indian Institute of Technology, Bombay
Indian Institute of Technology, Delhi
Indian Institute of Technology, Madras
Indian Institute of Technology, Kanpur
Indian Institute of Technology, Roorkee
Indian Institute of Technology, Guwahati
Indian Institute of Technology (Banaras Hindu University), Varanasi
Indian Institute of Technology, Indore
Indian Institute of Technology, Jodhpur
Indian Institute of Technology, Hyderabad
National Institute of Technology, Tiruchirappalli
National Institute of Technology, Warangal
National Institute of Technology, Calicut
National Institute of Technology, Patna
National Institute of Technology, Jalandhar
National Institute of Technology, Jaipur
National Institute of Technology, Durgapur
National Institute of Technology, Surat
National Institute of Technology, Allahabad
Indian Institute of Information Technology, Allahabad
ABV Indian Institute of Information Technology, Gwalior
PDP Indian Institute of Information Technology, Jabalpur
Jawahar Lal Nehru Technological Univeristy, Hyderabad
College of Engineering, Guindy
Delhi Technological Univeristy, New Delhi
& around 100 engineering colleges.

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Project Summary

1. Idea Behind the Project

As a college student, I noticed that irregular sleep habits, long screen time, and poor daily routines often affect my productivity and focus. Many students face similar problems but do not analyze their habits properly. The idea of this project was created to analyse how daily lifestyle habits like sleep hours, study time, screen usage, and physical activity affect a student's productivity and sleep quality.

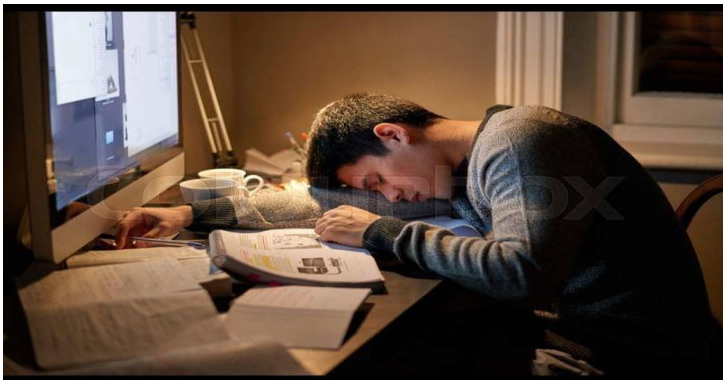

Figure 1: Common issue faced by student with bad lifestyle

2. About the Project

This project uses machine learning to predict sleep quality and productivity score based on daily lifestyle inputs. It provides insights that help students understand and improve their daily routine.

3. Software Used and Technical Requirement

Python 3.x
Jupyter Notebook

Pandas
NumPy
Matplotlib
Scikit-learn
Streamlit

Basic computer system

4. Result / Working of Project

The model takes daily habit inputs and predicts sleep quality and productivity score and displays insights using a user-friendly interface.

5. Research Work

No such formal research was conducted. The project is based on practical observation and analysis of student daily habits.

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Data Flow Diagram / Process Flow

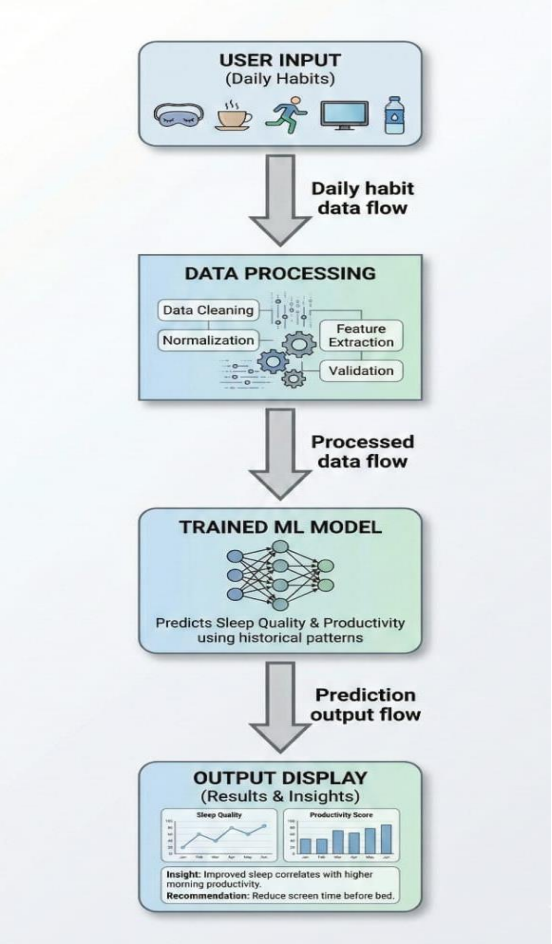

Figure 2: Data Flow Diagram

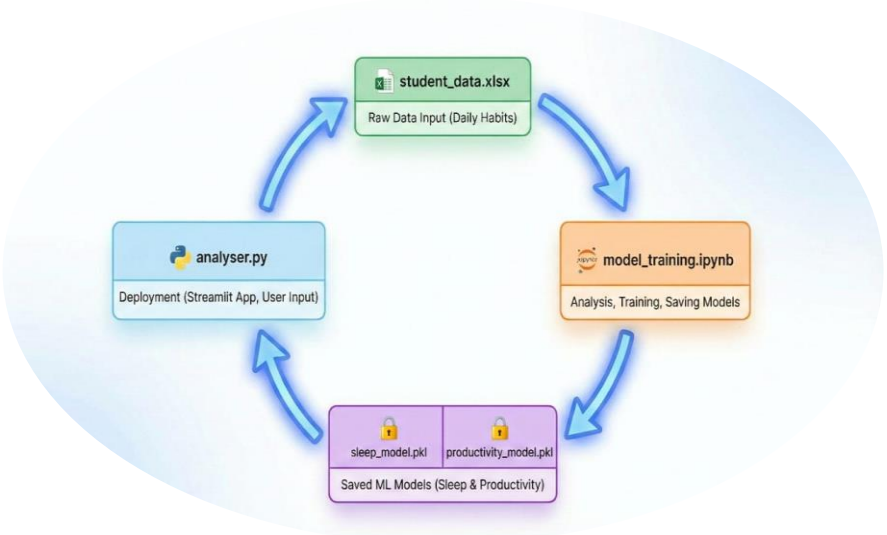

Figure 3: Data structure diagram

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Code / Program with Supported Screenshots

1. Project Structure

```
Student_Productivity_Sleep_Analysis/
|
├── student_data.xlsx
|   (Excel file containing student daily habit dataset)
|
├── model_training.ipynb
|   (Jupyter Notebook used for data analysis, visualization,
|    machine learning model training, and saving trained models)
|
├── sleep_model.pkl
|   (Saved machine learning model for predicting sleep quality)
|
├── productivity_model.pkl
|   (Saved machine learning model for predicting productivity score)
|
├── analyser.py
|   (Python file used for deploying the trained models
|    using Streamlit and taking user input)
```

The project code is implemented using Python in Jupyter Notebook.
The complete implementation is divided into different stages such as data loading, data visualization, model training, coefficient analysis, and model saving. Each process is done step by step with proper understanding.

Importing Required Libraries

Essential Python libraries such as Pandas, NumPy, and Matplotlib are imported. These libraries are used for data handling, numerical computation, and visualization.

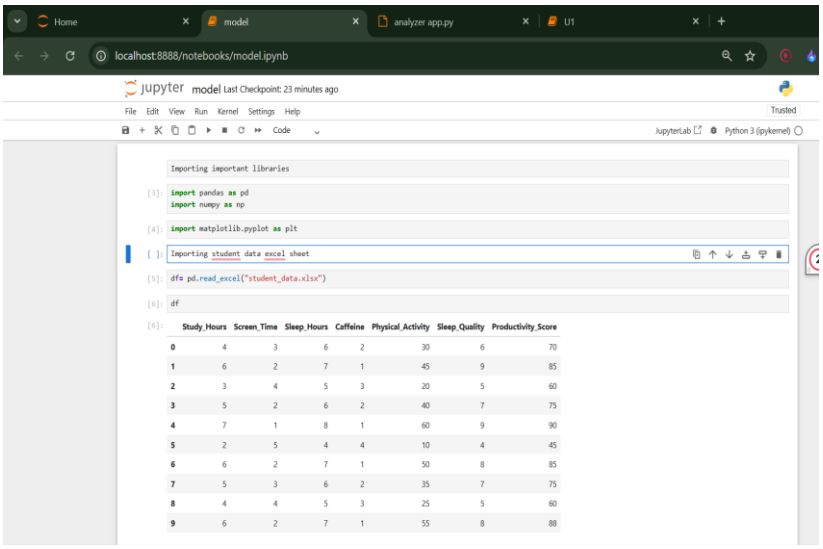

Figure 4: Importing Required Python Libraries

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2. Loading the dataset.

The dataset is loaded from an Excel file using Pandas. The dataset is displayed to understand its structure, column names, and sample values. This helps in verifying that the data is loaded correctly before further processing.

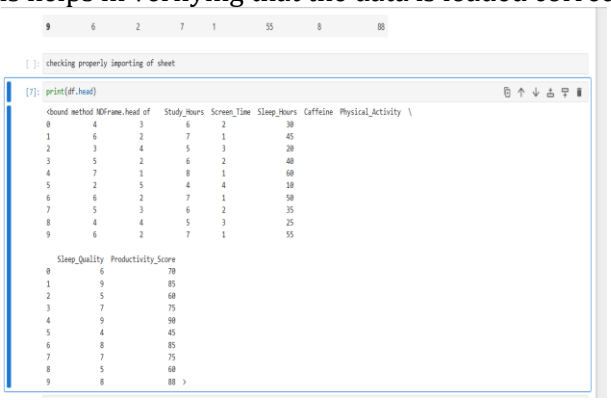

Figure 5: Loading and displaying the dataset

3. Data Visualization

Two scatter plot is used to visualize the relationship between sleep hours & sleep quality and study hours and productivity score.

Sleep Hours vs Sleep Quality

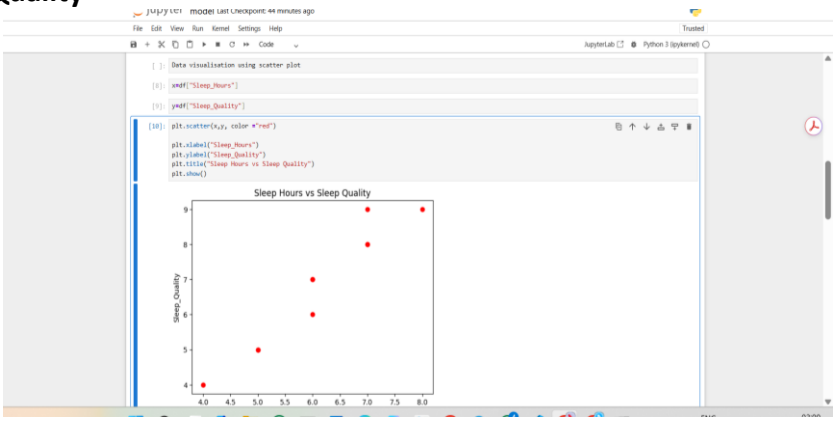

Figure 6: Scatter Plot of Sleep Hours vs Sleep Quality

Study Hours vs Productivity Score

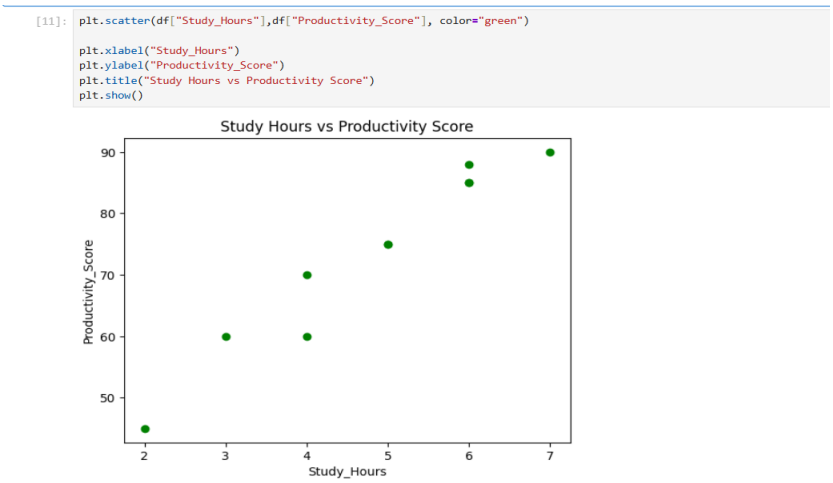

Figure 7: Scatter Plot of study hours and productivity score.

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4. Feature Selection and Model Training

Input features are selected as independent and dependent variables.

Linear Regression algorithm from Scikit-learn is used to train two models.

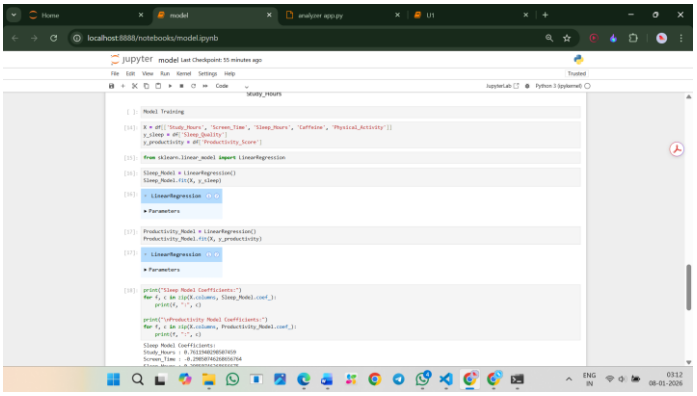

Figure 8: Training Linear Model

5. Saving the Trained Model

The trained machine learning models are saved using the pickle file library.

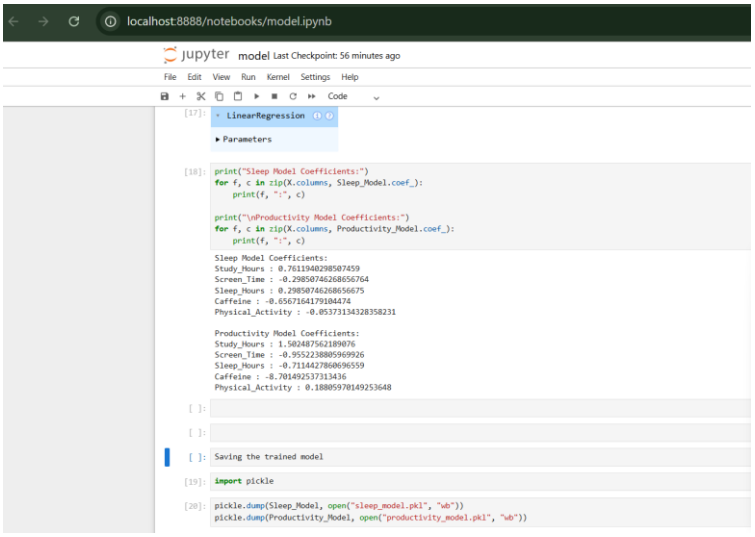

Figure 9: Saving trained model using pickle

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6. Model Deployment

The python file is used to deploy the trained model using Streamlit. The file loads the saved model and provides an interactive UI for users.

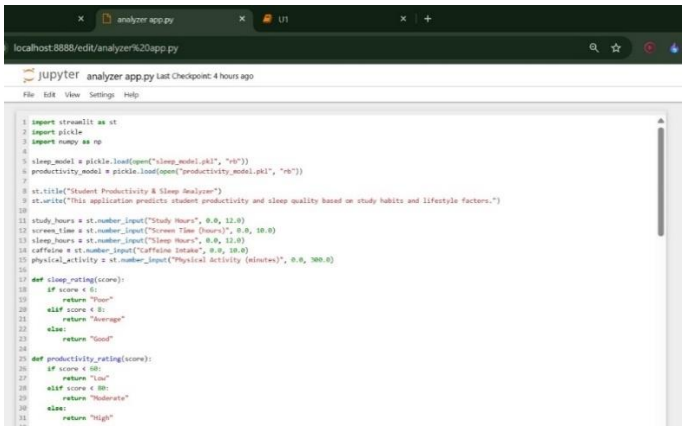

Figure 10: Importing Libraries, Loading trained Models and Creating UI

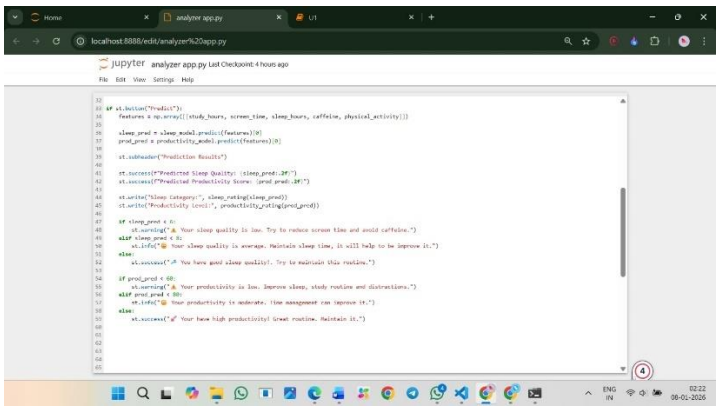

Figure 11: Prediction of Sleep Quality and Productivity with Output Insight

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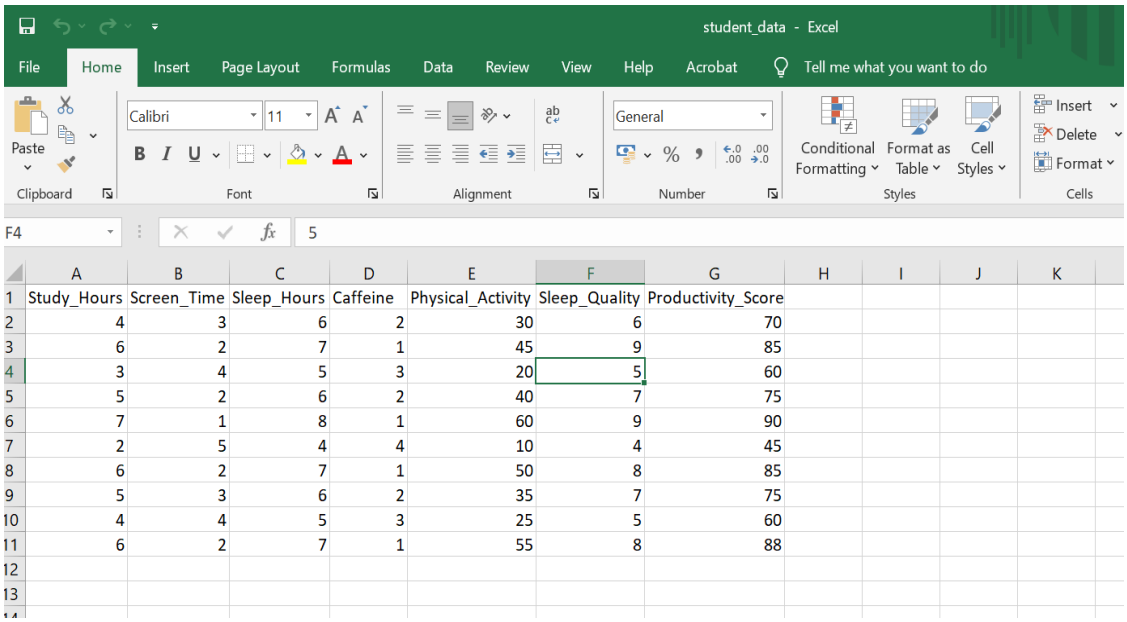
Input / Output with Datasets & Supported Screenshots

Input:



	A	B	C	D	E	F	G	H	I	J	K
1	Study_Hours	Screen_Time	Sleep_Hours	Caffeine	Physical_Activity	Sleep_Quality	Productivity_Score				
2	4	3	6	2	30	6	70				
3	6	2	7	1	45	9	85				
4	3	4	5	3	20	5	60				
5	5	2	6	2	40	7	75				
6	7	1	8	1	60	9	90				
7	2	5	4	4	10	4	45				
8	6	2	7	1	50	8	85				
9	5	3	6	2	35	7	75				
10	4	4	5	3	25	5	60				
11	6	2	7	1	55	8	88				
12											
13											

Table 1: Input Dataset for Model Learning

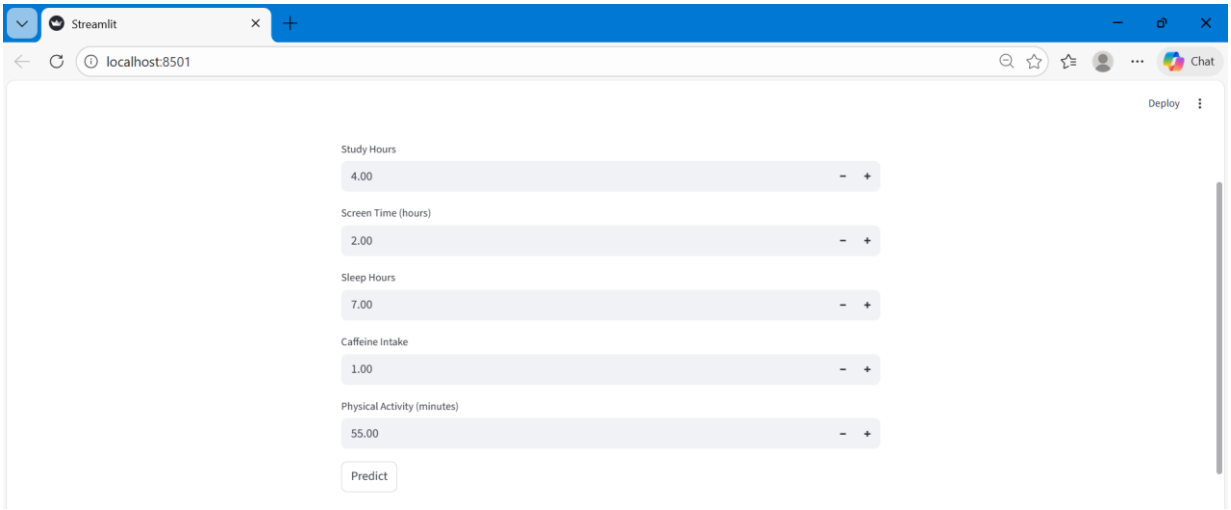


Figure 12: User Input Interface

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Output:

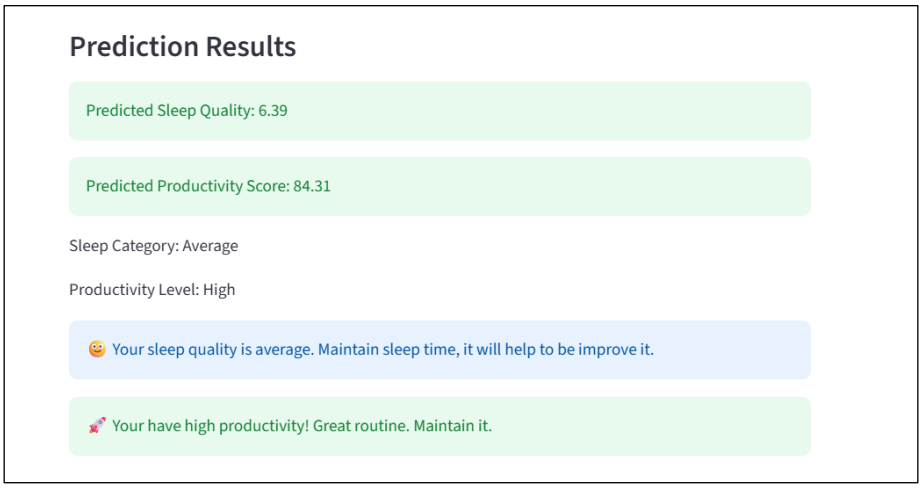

Figure 13: Screenshot of Output (Prediction Result)

Images / Video Links

Google Drive Link

https://drive.google.com/drive/folders/1EAIep_SZ36BS214vziB0hXrzWhpOd0LU?usp=sharing

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References

- **Python Official Documentation –**

Used to understand Python programming basics.(https://docs.python.org)

- **Pandas Documentation –**

Referred for data handling and data processing. (https://pandas.pydata.org/docs)

- **NumPy Documentation –**

Used for numerical operations and array handling. (https://numpy.org/doc)

- **Matplotlib Documentation –**

Used for data visualization and plotting graphs. (https://matplotlib.org)

- **Scikit-learn Documentation –**

Referred for implementing machine learning algorithms such as Linear Regression. (https://scikit-learn.org)

- **Streamlit Documentation –**

used for creating a simple web interface for model deployment.(https://docs.streamlit.io)

- **Jupyter Notebook Documentation –**

Used for interactive coding and model development. (https://jupyter.org)

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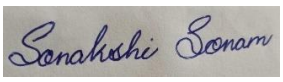
Student *Self Evaluation of the Short-Term Internship*

Please rate your performance in the following areas:

1)	Oral communication	1	2	3	4	5
2)	Written communication	1	2	3	4	5
3)	Initiative	1	2	3	4	5
4)	Interaction with staff	1	2	3	4	5
5)	Attitude	1	2	3	4	5
6)	Dependability	1	2	3	4	5
7)	Ability to learn	1	2	3	4	5
8)	Planning and organization	1	2	3	4	5
9)	Professionalism	1	2	3	4	5
10)	Creativity	1	2	3	4	5
11)	Quality of work	1	2	3	4	5
12)	Productivity	1	2	3	4	5
13)	Progress of learning	1	2	3	4	5
14)	Adaptability to organization's culture/policies	1	2	3	4	5
15)	OVERALL PERFORMANCE	1	2	3	4	5



Signature of the Student

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Annexure 1

Daily Activity Report

Week No: 1

Day & Date	Brief Description of Daily Activity	Learning Outcome	Person In-Charge
Day 1 (22-12-2025)	Attended Orientation Class & Learned Python basics such as variables, print function, comments and number & string data types.	In Orientation class, I have learned about internship model-T,A,P and how classes will be conducted. From Training Part, Understood Python fundamentals and basic syntax, how data type works.	Mayur Sir & Mallika Mam
Day 2 (23-12-2025)	Studied advanced data types including List, Tuple, Dictionary, and their methods.	I get to know what is list, tuple, and dictionary; how to use them, their syntax, various methods and operations formed using these datatypes along with some example.	Mallika Mam
Day 3 (24-12-2025)	Learned Set and Boolean datatypes, user input, typecasting, and control statements.	Developed logical thinking and decision-making skills.	Mallika Mam
Day 4 (25-12-2025)	Worked on First project (Quiz Game)using Python. Then learned Loops concept.	Applied programming concepts to a real-time project.	Mallika Mam
Day 5 (26-12-2025)	Learned file handling, functions, and Python Packages.	Understood file creation, editing, code reusability techniques by various function type, anonymous function.	Mallika Mam

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Annexure 1

Daily Activity Report

Week No: 2

Day & Date	Brief Description of Daily Activity	Learning Outcome	Person In-Charge
Day 6 (27-12-2025)	Gained experience with packages, modules, and exception handling.	Learned how to create own package and module, error handling, creating own error and code reusability techniques.	Mallika Mam
Day 7 (28-12-2025)	Studied Object-Oriented Programming concepts and NumPy basics.	Understood structured programming and numerical computing.	Mallika Mam
Day 8 (29-12-2025)	Learned Pandas, Matplotlib, and attended model demonstrations.	Gained knowledge about how to deal with tabular data, data visualization skills.	Mallika Mam
Day 9 (30-12-2025)	Gained learning experience on various projects to enhance practical understanding.	Improved problem-solving skills and gained hands-on experience.	Mallika Mam
Day 10 (31-12-2025)	Worked on more projects and learned model deployment.	Understood deployment concepts and real-world application usage.	Mallika Mam

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Annexure 2
Weekly Progress Report

Week(s)	Summary of Weekly Activity
Week 1	Learned about Python and OOPS concept
Week 2	Learned about Machine Learning modules and working with some example projects

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