

Project Proposal

Wellness AI



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Version History

Version	Date	Author(s)	Changes	State
0.1	07/03/25	Ivet Kalcheva	Initial draft, basic structure	Draft

Distribution

Version	Date	Receivers
0.1	09/03/25	Roopali Gupta, Hans Konings, Martijn Lamers, John Litsenburg

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Introduction

What?

This project aims to develop a machine learning model that predicts **users' productivity** based on their daily lifestyle factors, such as exercise, sleep quality, stress levels, screen time, caffeine intake and work hours. The goal is to provide actionable insights to help individuals optimise their daily routines for improved productivity and overall well-being.

Why?

Productivity is a key driver of success and personal satisfaction, but it is often hindered by poor sleep, high stress and unhealthy routines. By leveraging predictive analytics, this project aims to:

**Identify key
productivity factors**

**Provide lifestyle
recommendations**

**Offer insights for mental
and physical well-being**

Who?



Aleksandur Lybchev

- **Medical student**, specialising in psychiatry and well-being.
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Ivet Kalcheva

- **Lead developer**
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General Public

- Individuals seeking advice for better sleep, stress management, and overall productivity.

When?

End Date	Week 4	Week 6	Week 8	Week 9	Week 10	Week 11
Iteration 0						
Iteration 1						
Iteration 2						
Iteration 3						
Iteration 4						
Masterpiece						

- **Iteration 0:** Draft project proposal, data collection, environment setup and **K-Nearest Neighbours (KNN)** implementation.
- **Iteration 1:** Implement feedback and include **Linear Regression**.
- **Iteration 2:** Implement feedback and include **Decision Trees** and **Data Visualization**.
- **Iteration 3:** Feedback implementation, **Data Cleaning**, **Evaluation Metrics** and **Optimizations**.
- **Iteration 4:** Final iteration, focusing on **Reporting** and **Presentation**.
- **Masterpiece:** Finalised implementation and **Submission**.

How?

The final product will be an interactive web application, where users can input their daily habits (e.g., sleep hours, screen time, caffeine intake) and receive predictions for sleep quality and stress levels, alongside personalised recommendations for improvement. The machine learning model will be updated periodically with new data to maintain accuracy.

Domain Understanding

Research Question

What lifestyle factors have the greatest impact on productivity and how can they be optimized to enhance performance and well-being?

Exploratory Research

Understanding the domain is critical for identifying the right features to ensure the highest prediction accuracy. This research will focus on:

- Correlations between sleep quality and productivity.
- Impact of stress levels on daily performance.
- Effects of exercise and screen time on focus and energy.
- Role of caffeine and work hours in maintaining optimal productivity.

Research Methods (DOT Framework)

- **Document Analysis:** Analyse existing documentation on relevant data that could enhance my understanding of the factors influencing productivity.
- **Model Evaluation:** Assess the model's performance through metrics like accuracy or RMSE.
- **Prototyping:** Once the algorithm and data are working alongside, it is time for building a prototype model. This could involve creating a tool that predicts productivity based on input lifestyle factors.

Analytic Approach

Target Variable

The target variable is **Productivity Score**, measured on a self-reported scale of 1–10.

Type of Problem

This is a regression problem, where the goal is to predict a numerical value (productivity score).

Potential Machine Learning Models

- **K-Nearest Neighbours (KNN):** A simple, effective model for early iterations.
- **Linear Regression:** A baseline model to understand the relationship between lifestyle factors and productivity.
- **Decision Trees:** A model to capture non-linear relationships and feature interactions.

Defining success

Success will be defined by:

- **Prediction Accuracy:** The model's ability to correctly predict productivity scores.
- **Generalization Across Routes:** The model's ability to predict accurately for different users and their individual habits.
- **Stakeholder Satisfaction:** Positive feedback on usability and effectiveness.

Data Requirements

Define Objectives

To predict productivity levels based on lifestyle factors and recommend actionable changes for improvement.

Data Characteristics

- Daily records of lifestyle factors: sleep quality, exercise, screen time, caffeine intake, stress levels, etc.
- Self-reported scores for productivity, mood and stress.

Data Sources

Kaggle dataset: [["Sleep Cycle & Productivity"](#)]

Data Legality and Ethics

- Ensure compliance with data privacy laws (e.g., GDPR).
- Avoid sensitive or personally identifiable information.

Data Diversity

Ensure the dataset includes a diverse range of age groups, genders, and lifestyle habits to improve model generalization.

Version Control

Using GitHub for code and dataset versioning: [["WellnessAI"](#)]

Iterative Process

The process will be iterative, with continuous evaluations of model performance. The data collection and preprocessing steps will be refined to improve the model's accuracy and relevance.

Conclusion

This project will provide valuable insights into how lifestyle factors influence productivity. By leveraging machine learning, individuals can optimise their daily routines, leading to better productivity and overall well-being. The final product will be an interactive tool designed to help users make data-driven decisions for a healthier, more productive lifestyle.