TaskNest ML Project – Explanation

# 📘 Project Overview

TaskNest ML enhances the TaskNest to-do list application with machine learning capabilities to make it smarter and more user-friendly. It analyzes the task data to automatically predict priority levels, estimate deadlines, assess overdue risks, and suggest appropriate categories.

# 🛠️ Core Features

## 1. Priority Prediction (Classification)

Predicts whether a task is High, Medium, or Low priority based on its description using TF-IDF vectorization and Logistic Regression.

## 2. Deadline Estimation (Regression)

Estimates the due date (in days) based on task text using Linear Regression. Helps in automatically assigning due dates to tasks with missing deadlines.

## 3. Overdue Risk Prediction (Binary Classification)

Predicts the likelihood of a task being overdue by comparing due and completed dates, using Logistic Regression.

## 4. Smart Categorization (Multi-Class Classification)

Suggests task categories (Work, Personal, Health, etc.) based on task descriptions using TF-IDF and Logistic Regression with Label Encoding.

# 📂 Input Data Format

The model requires a CSV file (tasks\_dataset.csv) with the following columns:  
- text  
- priority  
- due\_date  
- category  
- created\_date  
- completed\_date

# 🎯 Outcome

TaskNest becomes an intelligent assistant that:  
- Predicts task priority  
- Estimates deadlines  
- Detects overdue risk  
- Suggests categories  
This makes the task management experience smarter and less manual for users.

# 📦 Technologies Used

- Python (Jupyter Notebook)  
- Libraries: pandas, scikit-learn, numpy, joblib  
- Models: Logistic Regression, Linear Regression  
- Text Vectorization: TF-IDF