

Linear Regression Assignment

Real-world Context:

You are a data scientist at an agricultural technology startup that helps farmers optimize crop yield. Your team has collected data from 100 farms to understand the relationship between the amount of fertilizer applied and crop yields.

Dataset Description:

- Feature: Amount of fertilizer applied per acre (kilograms)
- Target: Crop yield per acre (kilograms)

Your Task:

1. Use the provided dataset to build a linear regression model predicting crop yield based on the amount of fertilizer used.
2. Evaluate the performance of your model using appropriate metrics (e.g., R-squared, Mean Squared Error).
3. Interpret the relationship and provide actionable insights for farmers:
 - How strongly does fertilizer amount predict crop yield?
 - Recommend optimal fertilizer usage to maximize yield without waste.

Deliverables:

- Jupyter Notebook or Python script demonstrating data exploration, model building, and evaluation.
- A short written summary (1-page max) of your insights and recommendations.

Good luck!