

REGRESSION ANALYSIS

House Price Prediction &
Weather Forecasting

Course Title: Software Project Lab I
Course code: SE 2105

■ Presented by

Sabbir Ahmed

Roll: 1530

E-Mail: bsse1530@iit.du.ac.bd



■ Supervised by

Dr. Rezvi Shahariar

Associate Professor

Institute of Information Technology





INTRODUCTION

This project implements multiple linear and nonlinear regression models in C programming to predict house prices and weather conditions. By analyzing factors such as square footage, location, and climate parameters, the project demonstrates how regression techniques can be applied to solve real-world problems efficiently.

■ Attributes

Date

Season

Temparature

Humidity

Wind_Speed

Pressure

Rain [1 for rain, 0 for sunny/no rain)

■ Size

Dataset loaded with 2500 records.



DATASET FOR WEATHER FORCATING



■ Attributes

Size

Location

Security & Garage

Number of floor

Number of rooms

Built year

Price

■ Size

Dataset loaded with 1500 records.



House Price Prediction **DATASET**



■ Load Data

Reads and parses CSV data.

■ Train Model

Initializes regression coefficients.

■ Predict Rain

Predicts rain using logistic regression.

■ Predict House Price & Temperature

Predicts temperature & house price using linear regression.

■ Split Dataset

Divides the dataset into training and testing sets.

■ Evaluate Model

Assesses model performance.

SYSTEM WORKFLOW



MODEL OVERVIEW

■ Logistic Regression:

- Predicts binary outcomes (rain/no rain).
- Formula: $P(\text{rain}) = \frac{1}{1+e^{-(\beta_0+\beta_1x_1+\beta_2x_2+\beta_3x_3)}}$
- Threshold: $P(\text{rain}) > 0.5 \rightarrow \text{Rain.}$

■ Linear Regression:

- Predicts continuous outcomes (House price & temperature).
- Formula: $\hat{y} = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \dots + \beta_nx_n$



RESULTS

- Model Accuracy:
Actual accuracy from execution, e.g., 80- 90%
- Sample Output:
 - House Price: \$236169.42
 - Rain Prediction: No Rain.
 - Temperature Prediction: 24.5°C.

CHALLENGES FACED

■ Data preprocessing

Handling missing or inconsistent data.

■ Feature Selection

Identifying key factors affecting prices and weather conditions is complex.

■ Large File Handling

Processing massive datasets efficiently requires optimized storage and computing power.



■ Coefficient Calculation in Matrix

Calculating coefficients in large matrices for regression models is computationally intensive.

FUTURE ENHANCEMENTS



Expanded Features

Include additional factors like solar radiation or cloud cover.



Real-Time Predictions

Integrate live weather data for real-time forecasting.



Visualization

Graphical representation of predictions and trends.



QUESTIONS

Questions and Discussion

Feel free to ask any questions or provide feedback on the project.

