

Project Development Phase Model Performance Test

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| Date | 21 November 2023 |
| Team ID | Team-592148 |
| Project Name | Project – Smart Home – Temperature Prediction |
| Maximum Marks | 10 Marks |

Model Performance Testing:

| S.No. | Parameter | Values | Screenshot (For Light Gradient Boost Model) |
|-------|-----------|---|--|
| 1. | Metrics | Regression Model: For Light Gradient Boost Model(Best Model, selected for project) MAE– 0.5090 MSE – 0.5008 RMSE – 0.7076 R2 score – 0.9361 For Linear Regression Model MAE– 1.5727 MSE – 3.7428 RMSE – 1.9346 R2 score – 0.5222 For Random Forest Model MAE– 0.5212 MSE – 0.6311 RMSE – 0.7944 R2 score – 0.9194 For Xgboost Model MAE– 0.5327 MSE – 0.5384 RMSE – 0.7338 R2 score – 0.9313 | <pre> 1 #for Light Gradient Boost Model 2 mae = mean_absolute_error(y_test, pred2) 3 print(mae) 4 mse1 = mean_squared_error(y_test, pred2) 5 print(mse1) 6 nrmse = np.sqrt(mse1) 7 print(nrmse) 8 r2_score(y_test,pred2) </pre> <p>0.5089989459469727 0.5007536664270105 0.7076395031560989</p> <p>: 0.9360756052934541</p> <pre> 1 #for Linear Regression Model 2 mae = mean_absolute_error(y_test, pred) 3 print(mae) 4 mse1 = mean_squared_error(y_test, pred) 5 print(mse) 6 nrmse = np.sqrt(mse1) 7 print(nrmse) 8 r2_score(y_test,pred) </pre> <p>1.572677907866914 3.7427887580824297 1.934628842461114</p> <p>0.5222091780535016</p> <pre> 1 #for Random Forest Model 2 mae = mean_absolute_error(y_test, pred1) 3 print(mae) 4 mse1 = mean_squared_error(y_test, pred1) 5 print(mse1) 6 nrmse = np.sqrt(mse1) 7 print(nrmse) 8 r2_score(y_test,pred1) </pre> <p>0.5211940722891568 0.6311135111844771 0.7944265297587166 0.9194343408777197</p> |

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1 #for XgBoost Model
2 mae = mean_absolute_error(y_test, pred3)
3 print(mae)
4 mse1 = mean_squared_error(y_test, pred3)
5 print(mse1)
6 nrmse = np.sqrt(mse1)
7 print(nrmse)
8 r2_score(y_test,pred3)

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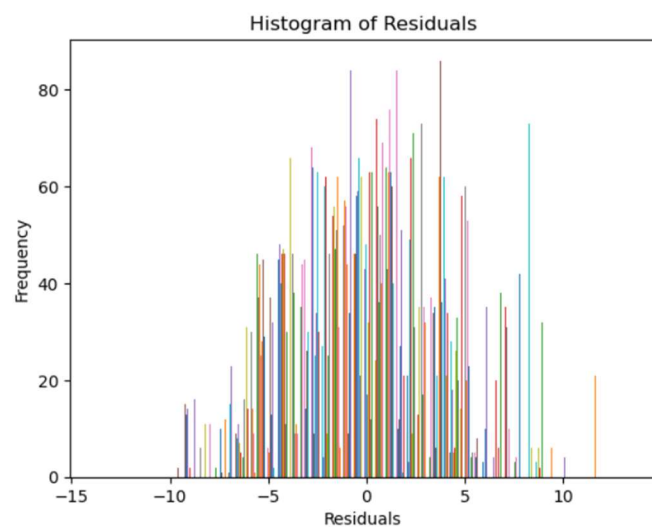
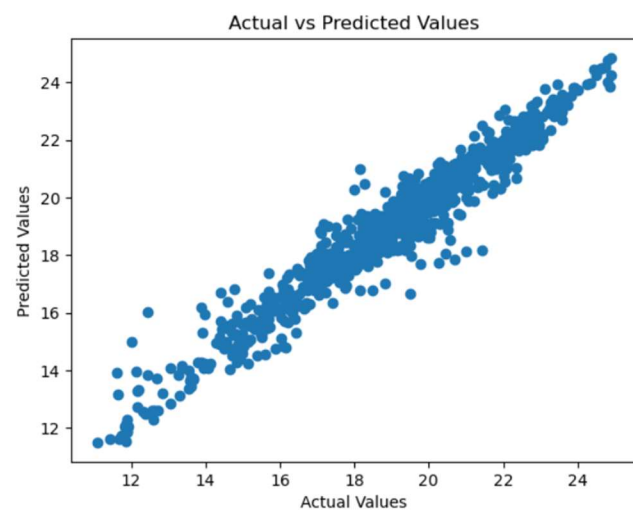
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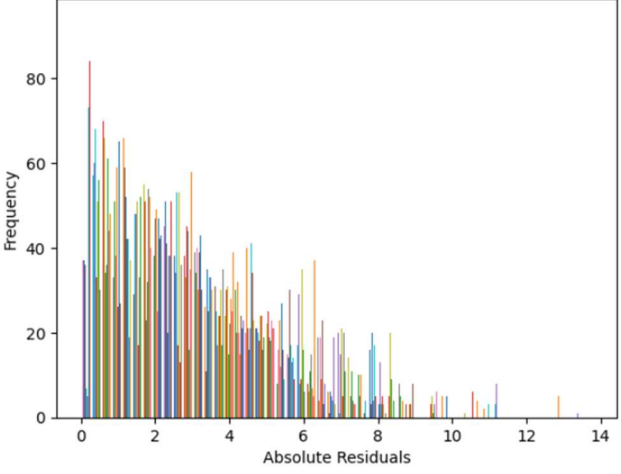
0.5383893229516795

0.7337501774798283

0.9312711740450739

Below Graphs are for Light Gradient Boost Model



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| | | | <p>Histogram of Absolute Residuals</p>  <p>The histogram displays the frequency of absolute residuals. The x-axis, labeled 'Absolute Residuals', ranges from 0 to 14 with major ticks every 2 units. The y-axis, labeled 'Frequency', ranges from 0 to 80 with major ticks every 20 units. The distribution is highly right-skewed, with the highest frequency (approximately 85) occurring at a residual value of 0. The frequency drops sharply as the residual value increases, with most of the data concentrated between 0 and 6. There are a few isolated bars at higher residual values, such as around 13 and 14.</p> |
| 2. | Tune the Model | Hyperparameter Tuning - Nil Validation Method - Nil | Not applicable, done without tuning |