Experiment 03 : Implement Machine Learning algorithms for Cognitive Computing.

Learning Objective : Students should be able to apply a Machine Learning algorithms for Cognitive computing.

Tool : RapidMiner

Theory :

Machine learning is an integral part of cognitive computing, which is a field of artificial intelligence that aims to create intelligent systems that can reason, learn, and perceive like humans. Machine learning provides the foundation for cognitive computing by enabling these systems to automatically learn and improve from experience without being explicitly programmed.

Some ways that machine learning is used in cognitive computing:

Natural Language Processing (NLP): Machine learning is used to analyze and understand natural language text and speech. This includes tasks such as sentiment analysis, text classification, and speech recognition.

Image and Video Recognition: Machine learning is used to recognize and identify objects, people, and scenes in images and videos. This includes tasks such as facial recognition, object detection, and image segmentation.

Personalization: Machine learning is used to personalize experiences for users by analyzing their preferences and behavior. This includes tasks such as recommending products, services, and content.

Predictive Modeling: Machine learning is used to make predictions based on historical data. This includes tasks such as predicting customer churn, forecasting sales, and detecting fraud.

Decision Making: Machine learning is used to support decision-making by analyzing data and making recommendations based on the insights gained. This includes tasks such as risk assessment, anomaly detection, and optimization.

Overall, machine learning is a crucial component of cognitive computing, enabling intelligent systems to learn and adapt to new situations and improve their performance over time. By leveraging machine learning algorithms, cognitive computing systems can analyze complex data, recognize patterns, and make informed decisions, making them a powerful tool for solving a wide range of problems in various industries.

Algorithm:

1. Data Collection: Gather the data you want to use for your linear regression model.

2. Data Preprocessing: This involves cleaning the data, handling missing values, and transforming the data into a suitable format for the model.

3. Split the Data: Divide the data into training and testing sets.

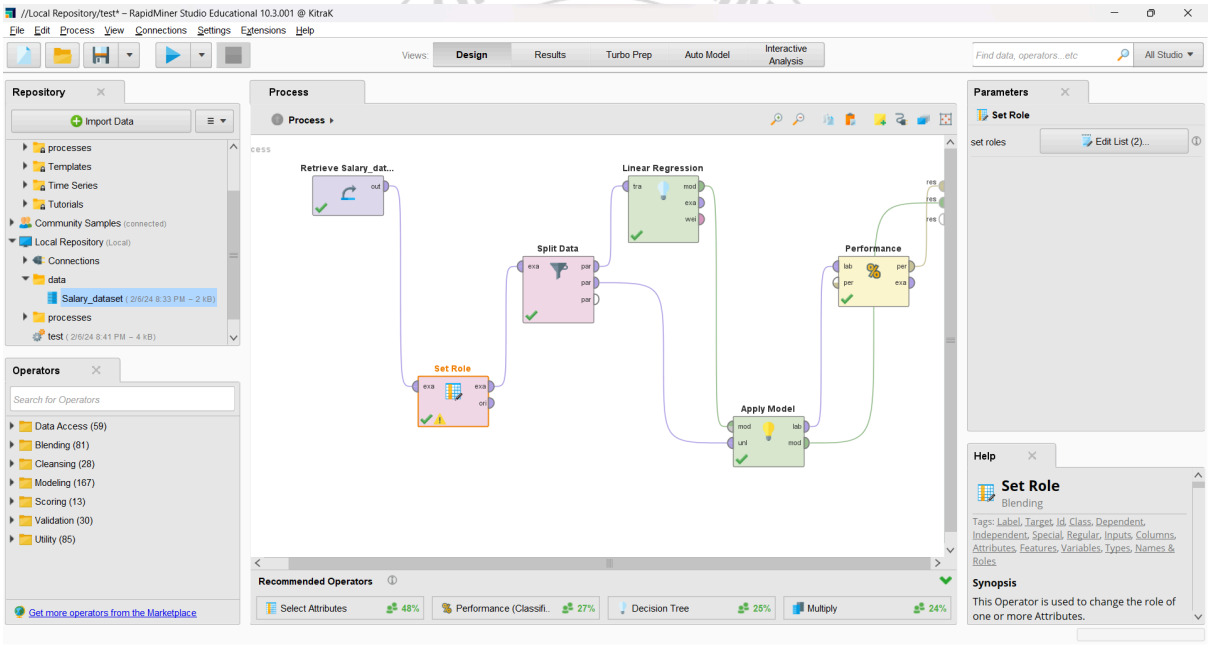
4. Model Training: Use the training data to train the linear regression model to find the best-fitting line that represents the relationship between the independent and dependent variables.

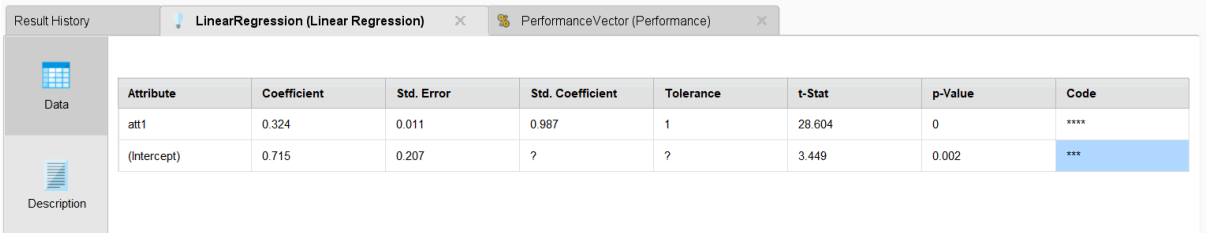
5. Make Predictions: Use the trained model to make predictions on the testing data.

6. Evaluate the Model: Assess the performance of the model using metrics such as mean squared error, R-squared, or others to understand how well the model fits the data.

7. Use the Model: Once the model is trained and evaluated, it can be used to make predictions on new, unseen data.

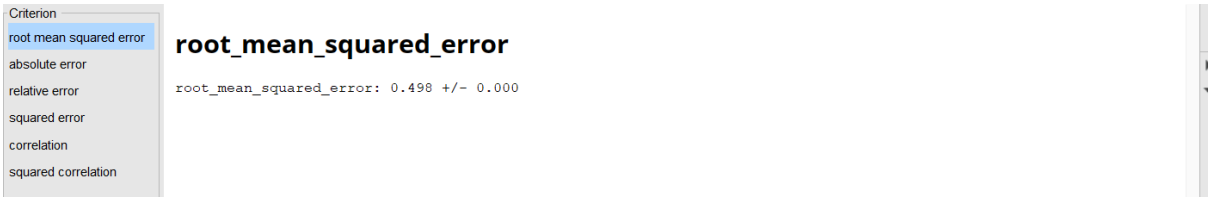
Implementation :





Attribute	Coefficient	Std. Error	Std. Coefficient	Tolerance	t-Stat	p-Value	Code
att1	0.324	0.011	0.987	1	28.604	0	****
(Intercept)	0.715	0.207	?	?	3.449	0.002	***

Result and Discussion :



Learning Outcomes : Students should have the ability to

LO 1.1: Formulate the Machine learning algorithms for CC.
LO 1.2: Solve the problem using Machine Learning Algorithms.

Course Outcomes :

CO : Understand and Apply future directions of Cognitive Computing.

Conclusion :

Viva Questions :

Q1. What are some key ethical considerations related to the use of machine learning in Cognitive Computing?

Q2. Can you design a machine learning algorithm that could be used for predictive modeling in a cognitive computing system?

Q3. What are some examples of machine learning algorithms commonly used in cognitive computing?

For Faculty Use

Correction Parameters	Formative Assessment [40%]	Timely completion of Practical [40%]	Attendance / Learning Attitude [20%]	Total
Marks Obtained				