

MACHINE LEARNING

ARTIFICIAL INTELLIGENCE
CENTER INDONESIA

CONTENT

Linear Regression

Logistic Regression

Decision Tree & Random Forest

Linear Regression

1. **Predictive Modelling – Introduction**
2. **Linear Regression**
 - a. Linear Regression intuition
 - b. Understanding of Linear Regression mathematical modelling
 - c. OLS approach for Linear Regression
 - d. Mean Squared Error
3. **Implementing Linear Regression using Python**
 - a. Using scikit-learn for implementing Linear Regression model
 - b. Train-test split
 - c. Performance Analysis for Regression model
 - d. R Squared Score
 - e. Exporting a trained model for Production
 - f. Use case analysis for Regression Problems



Gedung Lab Riset Multidisiplin FMIPA UI Lt.4
Universitas Indonesia, Depok - Jawa Barat | 16424
+62 821 1010 3938 | info@ai-ci-umg.com
<https://ai-ci-umg.com/>

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Logistic Regression

- 1. Predictive Modelling – Classification Problem Understanding**
- 2. Logistic Regression Understanding**
 - a. Mathematical modelling of Logistic Regression
 - b. Sigmoid Function
 - c. Cost Function for Logistic Regression
- 3. Implementing Logistic Regression using Python**
 - a. Implementing Logistic Regression using sklearn
 - b. Managing unbalanced data
 - c. Performance analysis for classification problem
 - d. Accuracy, recall, F1 Score, precision and Confusion Matrix
 - e. Optimizing Logistic Regression model

Decision Tree & Random Forest

- 1. Introduction to Decision Tree**
- 2. Decision Tree**
 - a. Decision Tree for Classification
 - b. Entropy based approach
 - c. Gini Impurity Approach
 - d. Decision Tree for Regression
 - e. Decision Tree implementation using Python
- 3. Overfitting and Underfitting**
 - a. Decision Tree Hyperparameters
 - b. Hyperparameter tuning using GridSearch
- 4. Decision Trees Visualization**
 - a. Installing graphviz
 - b. Annotating and Interpreting Decision Tree
 - c. Feature Importances
- 5. Random Forest Intuition**
 - a. Logic behind Ensemble Learning
 - b. Random Forest working idea
- 6. Implementing Random Forest using Python**

