– Data Mining –

Comparative Analysis of Imputation Techniques in Australian Rainfall Data

Proposal Presentation by

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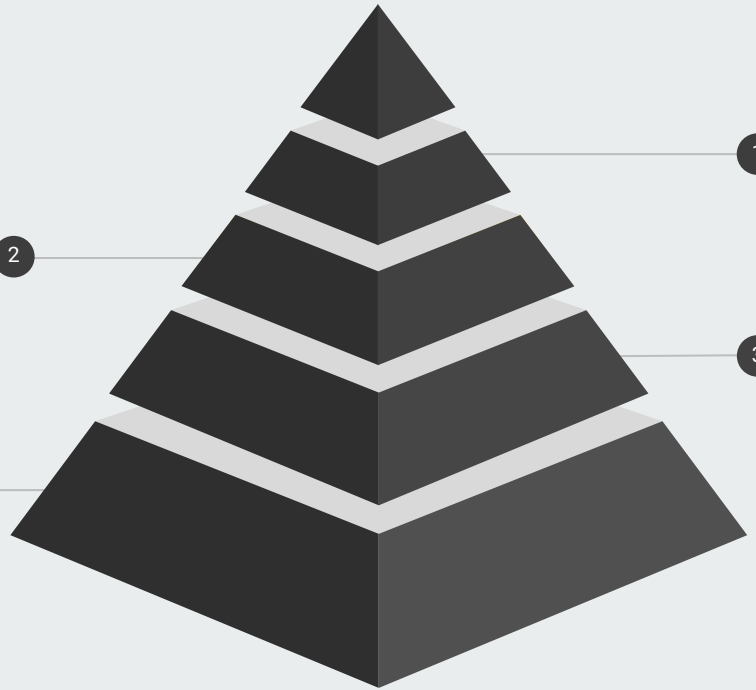
Agenda



1. Project Introduction
2. Implementation Plan and Literature Resources
3. Purpose of the Project
4. Learning Outcomes

Project Introduction

- **Addressing Common Daily Challenges: What are potential issues that may arise from missing values in a dataset?**
- **Why is it crucial to address missing values in a dataset with a more thorough approach?**
- **What made us pick this dataset?**
- **What does each row in the dataset represent, and what exactly are we trying to find or predict, also known as the target variable?**

Some of the variables/columns in our dataset:

- MaxTemp/MinTemp
- WindSpeed
- Humidity
- Evaporation
- Sunshine
- RainTomorrow

Implementation Plan and Literature Resources

IMPLEMENTATION PLAN

- **Programming Tool:** Python
- Employ various ***imputation techniques*** for missing values (Mean/Mode, KNN, EM, MICE, Hot Deck)
- Use various ***classification models***:
  Logistic Regression, Decision Trees, Random Forest, SVM, ANN, KNN, Naive Bayes and so on
- Apply ***feature selection techniques, hyperparameter tuning, cross-validation***
- Evaluate ***the accuracy scores*** of the classification models

LITERATURE RESOURCES

- Systematic Review of Using Machine Learning in Imputing Missing Values
- A Comparison of Strategies for Missing Values in Data on Machine Learning Classification Algorithms
- A survey on missing data in machine learning
- Impact of imputation of missing values on classification error for discrete data

Purpose of the Project & Learning Outcomes

PURPOSE

- Address ***the challenges of missing values*** in the data, a common issue in real-world datasets.
- Experiment with ***diverse imputation methods***
- Enhance our understanding of ***how to handle missing data effectively.***
- Improve ***data quality and reliability*** in predictive modeling.

LEARNING OUTCOMES

- To gain knowledge in ***preprocessing and handling missing values*** in the datasets
- To understand various ***imputation techniques*** *(statistical methods and machine learning models)*
- To develop ***proficiency in using tools*** for data analysis and modeling.
- To comprehend on how to ***evaluate and interpret the performance*** of different imputation strategies.

– Questions & Comments –