Tittle: Identification of Iris Flower Varieties Through Machine Learning Techniques.

Presented by- Team-04

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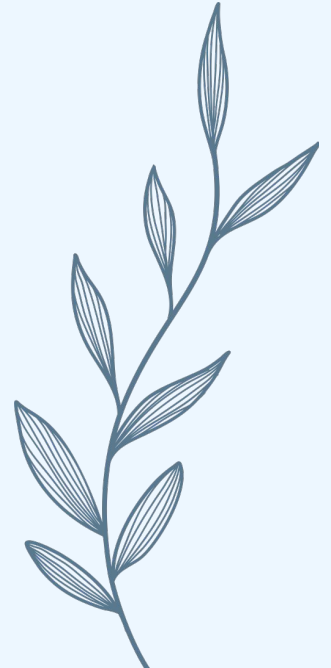
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Overview

- Abstract

- Introduction

- Literature review

- Methodology

- Dataset

Abstract

- Classification in Machine Learning:
  - Crucial for analyzing data.
  - Involves a diverse range of algorithms.
- Algorithms for Classification:
  - Decision trees, Naive Bayes, backpropagation, neural networks.
  - Artificial neural networks, multi-layer perceptrons.
  - Multi-class classification, Support Vector Machines (SVM), K-nearest neighbors (KNN).
- Research Focus:
  - Elaborated on three specific classification methods.
  - Implementation using the iris dataset and Scikit-learn toolkit.

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- Dataset and Process:
    - Iris dataset used for implementation.
    - Scikit-learn toolkit employed for implementation.
- Paper's Objective:
    - Employing classification and regression algorithms on the IRIS dataset.
    - Identification and examination of patterns based on sepals and petals sizes.
- Key Finding:
    - SVM classifier outperforms KNN and logistic regression models.
   - Higher accuracy achieved with the SVM classifier.

Introduction

Figure : setosa flower

Machine Learning Overview:

- Subset of computer science focused on creating adaptable programs through self-improvement when exposed to new data. Broadly categorized into supervised and unsupervised learning, with an emphasis on supervised learning involving classification and regression.

Iris Species Identification Study:

- Utilizes Fisher's Iris dataset for identifying Iris flower species. Aiming for high accuracy in predicting unseen data, the study employs supervised learning techniques, particularly classification. The Scikit-learn toolkit is used to implement various machine learning algorithms, including Support Vector Machine (SVM), K-Nearest Neighbor (KNN), and Logistic Regression classifiers.
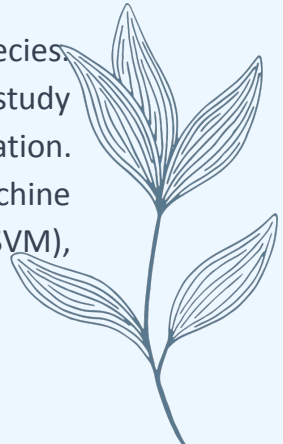
Methodology

- Implemented three key machine learning algorithms: Support Vector Machine (SVM), Logistic Regression, and K-Nearest Neighbor (KNN) classifiers.

- Employed four essential features from the iris dataset to train and test the classification models.

- Utilized the Python-based scikit-learn toolkit for seamless implementation and execution of the chosen algorithms.

- Conducted a comprehensive comparative analysis of the accuracy of SVM, Logistic Regression, and KNN models.
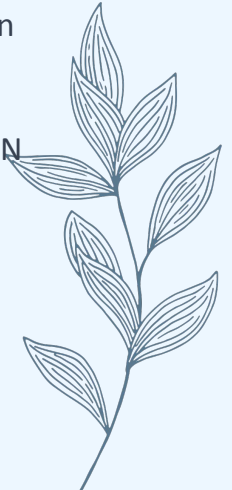
Dataset

- Flower Species: i. Iris-setosa, ii. Iris-versicolor, iii.Iris-virginica.

- Sample Size: i.150 individual samples, ii.50 samples per species

- Each sample includes measurements of four distinct features, capturing the morphological differences.

- Graphical illustration of iris flower samples and their measured features.

- A comprehensive dataset providing valuable insights into the morphological variations among Iris-setosa, Iris-versicolor, and Iris-virginica.

Literature Review

Machine Learning Approaches to IRIS Dataset

❖ Deeptam Dutta et al :
- Applied Artificial Neural Networks for classification.
- Focused on pattern recognition and predictive modeling.

❖ Poojitha A et al :
- Utilized MATLAB for unsupervised clustering with k-means.
- Emphasized neural network tools for large dataset categorization.

Literature Review

Advanced Methodologies and Statistical Analysis

❖ Vaishali Arya et al.:
- Introduced a neural fuzzy system for feature selection and rule derivation.
- Enhanced efficiency in the classification process.

❖ Shashidhar T et al. and Patrick S. et al.:
- Developed models to predict and forecast IRIS species characteristics.
- Combined statistical patterns and Java application for data analysis.

For each slide, you can include bullet points summarizing the key aspects of each study. Make sure to use concise language and focus on the main findings and methodologies used. Visual elements like charts or diagrams that represent the neural networks, clustering, or the fuzzy system could be helpful if you have the data available. Images of the IRIS flowers or dataset samples could also add a visual impact to the slides.

Thank You