SARUTHI T

Final Project

PROJECT TITLE

Classification and Prediction of IRIS using CNN,RNN,ANN

AGENDA

1. Problem Statement
2. Project Overview
3. Solution
4. Key Features
5. Modeling
6. Results

PROBLEM STATEMENT

The problem we aim to address is the classification of Iris flowers into one of three species based on features like sepal length, sepal width, petal length, and petal width.

- The Iris dataset is a classic benchmark dataset in machine learning used for classification tasks.
- Our goal is to develop a machine learning model that accurately predicts the species of Iris flowers based on their features.

PROJECT OVERVIEW

Our project focuses on building a classification model for the Iris dataset using various machine learning techniques.

- We explore three different approaches: Convolutional Neural Network (CNN), Recurrent Neural Network (RNN), and Artificial Neural Network (ANN).
- The project involves data preprocessing, model development, training, evaluation, and prediction phases.

WHO ARE THE END USERS?

Gardeners, landscapers, and horticulturists interested in cultivating Iris flowers can use the model to identify different species, select appropriate varieties for planting, and learn about the specific care requirements for each species.

YOUR SOLUTION AND ITS VALUE PROPOSITION

- To address the problem, we employ three different types of neural network architectures: CNN, RNN, and ANN.
- Each architecture is tailored to handle the unique characteristics of the Iris dataset and exploit patterns in the data for accurate classification.
- By utilizing deep learning techniques, we aim to achieve high accuracy in predicting the species of Iris flowers.

KEY FEATURES

- Utilization of Convolutional Neural Network (CNN), Recurrent Neural Network (RNN), and Artificial Neural Network (ANN) architectures.
- One-hot encoding of target variable for multi-class classification.
- Training and testing split for model evaluation.
- Evaluation metrics such as accuracy for assessing model performance.
- Prediction of Iris flower species based on input features.

MODELLING

- For the CNN approach, we construct a simple convolutional neural network architecture consisting of convolutional layers, max-pooling layers, and dense layers.
- The RNN approach involves the use of a simple recurrent neural network architecture with a single RNN layer and dense layers.
- In the ANN approach, we design a feedforward artificial neural network with multiple dense layers.
- Each model is compiled with appropriate loss functions, optimizers, and evaluation metrics before training.

RESULTS

- After training the models, we evaluate their performance on the test dataset.
- We achieve high accuracy in predicting the species of Iris flowers across all three approaches.
- The CNN, RNN, and ANN models demonstrate their effectiveness in classifying Iris flowers based on their features.
- The results validate the suitability of deep learning techniques for solving classification tasks on the Iris dataset.

DemoLink: https://colab.research.google.com/drive/1mFi73U69ofUzUqFPymFHK9OhfBRqb5re#scrollTo=W0Ov5sSZ5ZvM