Project Initialization and Planning Phase

Date	20 September 2024
Team ID	739755
Project Title	Bird Species Classification
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) template

The proposed solution involves developing a deep learning-based bird species classification system using Convolutional Neural Networks (CNNs) integrated with IBM Watson The dataset will be divided into training, validation, and testing sets to ensure effective learning and evaluation. A CNN model will be designed and trained to extract features and classify bird species accurately. A Flask-based web interface will be developed to allow users to upload images for classification.

Project Overview	
Objective	Develop a deep learning-based system for automatic bird species classification using Convolutional Neural Networks (CNNs) and IBM Watson.
Scope	The project focuses on processing bird images from the **CUB_200_2011** dataset, training a CNN model for classification, and deploying the model using IBM Watson with a Flask-based web interface for real-time image classification.
Problem Statement	
Description	Traditional bird species identification is a complex task that requires expert knowledge and manual effort. With thousands of bird species worldwide, differentiating them based on physical characteristics can be time-consuming and prone to human error.
Impact	Automating bird species classification can significantly benefit biodiversity research, conservation efforts, and ecological studies. A reliable AI-based system can help scientists track bird populations, detect endangered species, and monitor habitat changes more effectively.
Proposed Solution	

Approach	The project employs a Convolutional Neural Network (CNN) trained on the CUB_200_2011 dataset for bird species classification. Image preprocessing techniques such as resizing, normalization, and data augmentation will be applied to improve model performance
Key Features	Deep learning-based bird classification using CNNs. - Integration with IBM Watson for scalable and efficient deployment. - Flask-based web interface for user-friendly interaction. - Real-time image classification with accurate species prediction. - Transfer learning for improved model accuracy and faster training.

Resource Requirements

Resource Type	**Description**	**Specification/Allocation**
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	e.g., Google Colab with Tesla T4 GPU or 2 x NVIDIA V100 GPUs
Memory	RAM specifications	e.g., 16 GB RAM
Storage	Disk space for data, models, and logs	e.g., 1 TB SSD or Google Drive storage
Software		
Frameworks	Python frameworks	e.g., Flask, IBM Watson Machine Learning
Libraries	Additional libraries	e.g., TensorFlow, Keras, OpenCV, NumPy, Matplotlib
Development Environment	IDE, version control	e.g., Google Colab, Jupyter Notebook, GitHub
Data		
Data	Source, size, format	e.g., CUB_200_2011dataset from Kaggle, 11,788 images in JPG format