Project Initialization and Planning Phase

Date	27 January 2026
Student Name	Sammed Sunil Awati
Project Title	Uncovering the Hidden Treasures of the Mushroom Kingdom: A Classification Analysis
Maximum Marks	3 Marks

Project Proposal (Proposed Solution):

This project proposal outlines a solution to address a specific problem. With a clear objective, defined scope, and a concise problem statement, the proposed solution details the approach, key features, and resource requirements, including hardware, software, and personnel.

Project Overview	
Objective	To develop a deep learning-based image classification system capable of accurately identifying mushroom species—specifically from the Boletus, Lactarius, and Russula genera—based on visual attributes.
Scope	This project focuses on image-based classification of mushrooms using deep learning models. It covers the acquisition of image datasets, preprocessing, model training using transfer learning, and evaluation of classification accuracy. The final system will be able to classify images into one of the three target genera. The project is limited to these three categories and assumes images are of reasonable quality.
Problem Statement	
Description	Mushroom identification is challenging and typically requires expert knowledge. Mistakes can be dangerous, particularly when foraging. A reliable classification tool would benefit researchers, foragers, and hobbyists.

Impact	Precise mushroom classification aids ecological research, education, and safe foraging. An image-based system makes species recognition more accessible to all.

Resource Type	**Description**	**Specification/Allocation**
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	1 x NVIDIA RTX 3060 GPUs
Memory	RAM specifications	16 GB RAM

Storage	Disk space for data, models, and logs	500 GB SSD

Proposed Solution	
Approach	The project will employ CNN-based deep learning, using transfer learning from models like ResNet or EfficientNet. The mushroom image dataset will be cleaned, augmented, then used for training and fine-tuning.
Key Features	The system uses transfer learning to train efficiently with limited data, classifying mushrooms into three key genera. Data augmentation enhances model performance, with potential for a web-based interface.

Resource Requirements

Software		
Frameworks	Python frameworks	Python

Libraries	Additional libraries	tensorflow
Development Environment	IDE, version control	Jupyter Notebook, Git
Data		
Data	Source, size, format	Kaggle, MushroomObserver.org, JPEG/PNG format, 10,000 images