Project Initialization and Planning Phase

Date	29 June 2024
Team ID	SWTID1720084679
Project Title	CovidVision: Advanced COVID-19 Detection from Lung X-rays with Deep Learning
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) template

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 an advanced deep learning model that can accurately detect COVID-19 from lung X-ray images using transfer learning with the Inception model
Scope	The project will focus on utilizing convolutional neural networks (CNNs) and transfer learning to analyze lung X-ray images for COVID-19 detection. The system will be evaluated for accuracy using a publicly available dataset.
Problem Statement	
Description	The rapid and accurate detection of COVID-19 is crucial for effective patient treatment and controlling the spread of the virus. Traditional methods of detection can be slow and resource-intensive. This project aims to leverage transfer learning with the Inception model to provide a faster and more accurate alternative.
Impact	Implementing this solution can significantly reduce the diagnostic time and improve the accuracy of COVID-19 detection, thereby aiding in better patient management and potentially saving lives.

Proposed Solution	
Approach	• Preprocess the lung X-ray images to enhance the quality and remove noise. • Use the Inception model for transfer learning to train the model on the preprocessed images. • Optimize the model using techniques like data augmentation and hyperparameter tuning. • Evaluate the model's performance using various metrics and validate it with a separate test set.
Key Features	• Utilizes advanced deep learning techniques for high accuracy. • Provides rapid diagnostics, potentially in real-time. • Can be integrated into existing healthcare systems for seamless use. • Open-source implementation for broader accessibility and improvement.

Resource Requirements

Resource Type	Description	Specification/Allocation
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	12th Gen Intel(R) Core(TM) i7-1255U 1.70 GHz
Memory	RAM specifications	16.0 GB (15.7 GB usable)
Storage	Disk space for data, models, and logs	1 TB SSD
Software		
Frameworks	Python frameworks	Tensorflow ,keras, Flask
Libraries	Additional libraries	numpy, pandas, matplotlib
Development Environment	IDE, version control	Jupyter Notebook, Git
Data		
Data	Source, size, format	Kaggle dataset, nearly 5000images