SL Project Proposal (Proposed Solution)

Project Initialization and Planning Phase

Date: 30 July 2025
Project Title: AnemiaSense — Machine Learning Based Anemia Detection
Maximum Marks: 3 Marks

Project Proposal (Proposed Solution)

The proposal report aims to provide a machine learning-powered solution for early detection and management support of anemia. The system predicts anemia status based on clinical data, ensuring faster and more accurate assessments. Key features include an integrated web-based prediction interface, real-time analysis, and user-friendly result display.

Project Overview

Objective
The primary objective is to enable quick, accurate, and data-driven anemia detection using machine learning, allowing for timely medical intervention.

Scope
The project includes data preprocessing, model training, evaluation, and deployment via a Flask web application, ensuring accessibility for healthcare and educational purposes.

Problem Statement

Description
Current anemia detection often requires multiple lab tests and manual evaluation, which can be time-consuming and prone to delays in diagnosis.

Impact
Automating anemia detection will speed up diagnosis, improve accuracy, and support healthcare providers in making timely treatment decisions.

Proposed Solution

Approach
Using a Decision Tree Classifier trained on relevant patient data, the system will process clinical inputs (e.g., hemoglobin, RBC count, MCV) and classify anemia status instantly.

Key Features

- Implementation of a machine learning-based anemia detection model.
- Real-time prediction and result display via Flask web app.
- User-friendly input form for data entry.
- Automatic form reset and dynamic background updates after prediction.

Resource Requirements

Resource Type	**Description**	**Specification / Allocation**
Hardware	Computing Resources	Standard CPU / GPU (optional)
	Memory	8 GB RAM
	Storage	1 TB SSD
Software	Frameworks	Flask
	Libraries	numpy, pandas, scikit-learn, matplotlib, seaborn, pickle-mixin
	Development Environment	Jupyter Notebook, VS Code
Data	Data Source, size, format	Public anemia dataset, CSV format