Project Initialization and Planning Phase

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| Date | 24 June 2025 |
| Team ID | SWTID1750058607 |
| Project Title | Early-Stage Disease Diagnosis System Using Human Nail Image |
| 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.

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| **Project Overview** | |
| Objective | To develop a Deep Learning-based system that detects early-stage diseases by analyzing images of human nails. |
| Scope | The project involves detecting early-stage diseases by analyzing human nail images. It covers data collection, model training, and deployment through a user-friendly interface for quick and reliable predictions. |
| **Problem Statement** | |
| Description | Many health conditions manifest subtle symptoms on the nails (e.g., discoloration, ridges, changes in shape). However, people often overlook these indicators or lack the knowledge to interpret them.  There's a need for an automated tool that can assist in early detection by analyzing nail images |
| Impact | An accessible AI-driven tool can help individuals and healthcare professionals identify potential diseases at an early stage, enabling faster diagnosis, preventive action, and reducing healthcare costs and complications |
| **Proposed Solution** | |
| Approach | Collect a large dataset of annotated nail images.  Preprocess the images (resizing, normalization, augmentation). |

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|  | Train a Convolutional Neural Network (CNN) model to classify disease presence.  Evaluate model performance using accuracy, precision, recall. Deploy the model with a web interface using Flask to make it user- friendly and accessible. |
| Key Features | AI-driven detection of diseases from nail images. Real-time prediction through a web-based interface. Simple and intuitive UI for user convenience.  Scalable architecture for adding new disease categories. Safe handling of user-uploaded images. |

**Resource Requirements**

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| **Resource Type** | **Description** | **Specification/Allocation** |
| **Hardware** | | |
| Computing Resources | GPU for training the VGG16 model | 1 × NVIDIA V100 GPU or  equivalent |
| Memory | RAM for model training and inference | 16 GB |
| Storage | Disk space for dataset, model files, and logs | 256 GB SSD |
| **Software** | | |
| Frameworks | DL and web development frameworks | Tensorflow, Flask |
| Libraries | Additional libraries | Keras, OpenCV, NumPy, Pandas |
| Development Environment | IDE, version control | Google Colab, GitHub |
| **Data** | | |
| Data | Source, size, format | Custom dataset of human nail |

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|  |  | images, 655 training and 183 testing images (JPEG/PNG) images |