Model Development Phase Template

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| Date | 20-06-2025 |
| Team ID | SWDTID1749906902 |
| Project Title | Early Stage Disease Diagnosis System Using Human Nail Image Processing |
| Maximum Marks | 5 Marks |

**Feature Selection Report Template**

In the forthcoming update, each feature will be accompanied by a brief description. Users will indicate whether it's selected or not, providing reasoning for their decision. This process will streamline decision-making and enhance transparency in feature selection.

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| **Feature** | **Description** | **Selected (Yes/No)** | **Reasoning** |
| Image Pixels (Raw) | Raw pixel values of the nail image. | Yes | Fundamental for image processing and feature extraction. |
| Color Histograms | Distribution of color intensities (e.g., RGB, HSV) across the nail image. | Yes | Provides information about nail discoloration, which can indicate various diseases. |
| Texture Features | Statistical measures describing texture patterns (e.g., contrast, homogeneity, energy) in the nail image. | Yes | Texture changes in nails can be indicative of underlying medical conditions. |
| Shape Features | Characteristics of the nail's shape (e.g., curvature, aspect ratio, regularity of the nail plate). | Yes | Nail shape abnormalities are often associated with certain diseases. |

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| Nail Bed Visibility | Extent to which the nail bed is visible and its characteristics. | Yes | Changes in nail bed appearance can be a symptom of systemic diseases. |
| Lunula Presence/Size | Presence and size of the lunula (the crescent-shaped white area at the base of the nail). | Yes | Variations in lunula size or absence can be linked to health issues. |
| Cuticle Condition | State of the cuticle (e.g., inflamed, detached, healthy). | Yes | Cuticle abnormalities can suggest autoimmune diseases or infections. |
| Nail Plate Thickness | Thickness of the nail plate. | Yes | Changes in nail thickness can indicate fungal infections or other medical conditions. |
| Presence of Ridges/Grooves | Observation of horizontal or vertical ridges/grooves on the nail surface. | Yes | Ridges and grooves can be indicators of nutrient deficiencies or systemic illnesses. |
| Medical History (if available) | Relevant patient medical history data. | Yes | Provides crucial contextual information for diagnosis and can improve model accuracy. |
| Patient Age | Age of the patient. | Yes | Age can influence nail characteristics and disease prevalence. |
| Diagnosis Label | The confirmed diagnosis for the nail image. | Yes | The target variable for predictive modeling – essential for the project's goal. |