Data Collection and Preprocessing Phase

Date	05 February 2026
Team ID	LTVIP2026TMIDS66291
Project Title	Civil Engineering Insight Studio
Maximum Marks	6 Marks

Preprocessing Template

In the Civil Engineering Insight Studio project, preprocessing involves preparing the uploaded construction site image and user input before sending them to the AI model for analysis. The process begins with collecting the image and optional user description, followed by validating the image format, quality, and readability to ensure it is suitable for processing. The image is then prepared by converting it into a compatible format, adjusting size if necessary, and ensuring proper orientation for accurate analysis.

Section	**Description**
Data Overview	The data used in this project consists of user-entered text inputs such as recipe topic and desired word count. No external dataset is used.
Resizing	Resize images to a specified target size.
Normalization	Normalize pixel values to a specific range.
Data Augmentation	Apply augmentation techniques such as flipping, rotation, shifting, zooming, or shearing.
Denoising	Apply denoising filters to reduce noise in the images.

Batch Normalization	Apply batch normalization to the input of each layer in the neural network.
Data Preprocessing Areas	
Loading Data	User inputs are collected directly through Streamlit text input fields.
Input Validation	Code ensures valid recipe topic and word count before processing.
Prompt Creation	Code formats the validated input into a prompt for the Genai model.
Model Invocation	The formatted prompt is sent to the AI model for recipe information about material.
Output Handling	The generated recipe text is received and displayed on the Streamlit interface.