**Data Collection and Preprocessing Phase**

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| Date | 15 March 2024 |
| Team ID | SWTID1720114403 |
| Project Title | Vitamin Vision: Unveiling the Spectrum of Nutrient Detection |
| Maximum Marks | 6 Marks |

**Preprocessing Template**

The images will be preprocessed by resizing, normalizing, augmenting, denoising, adjusting contrast, detecting edges, converting color space, cropping, batch normalizing, and whitening data. These steps will enhance data quality, promote model generalization, and improve convergence during neural network training, ensuring robust and efficient performance across various computer vision tasks.

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| **Section** | **Description** |
| Data Overview | The dataset consists of a variety of images from different food sources, rich in different kind of vitamins.  The test\_data and the eval\_data have separate directories according to the major vitamin (among A, B, C, D, E) present in it. The test\_data is not divided in such a manner. |
| Resizing | Target Size = (255,255) |
| Normalization | Pixel range after normalization = [0,1] |
| Data Augmentation | Augmentation applied using rotation\_range, width\_shift\_range, height\_shift\_range, shear\_range, zoom\_range, horizontal\_flip attributes. |
| Denoising | Applying a Gaussian Blur, which may hep reduce the noise in the image. |
| Edge Detection | Apply edge detection algorithms to highlight prominent edges in the images. |
| Color Space Conversion | Convert images from one color space to another. |
| Image Cropping | Crop images to focus on the regions containing objects of interest. |
| Batch Normalization | Apply batch normalization to the input of each layer in the neural network. |
| **Data Preprocessing Code Screenshots** | |
| Loading Data | Code to load the dataset into the preferred environment (e.g., Python, R). |
| Resizing | Give the code snippet as an image (copy and paste the picture in this block). |
| Normalization | Give the code snippet as an image (copy and paste the picture in this block). |
| Data Augmentation | Give the code snippet as an image (copy and paste the picture in this block). |
| Denoising | Give the code snippet as an image (copy and paste the picture in this block). |
| Edge Detection | Give the code snippet as an image (copy and paste the picture in this block). |
| Color Space Conversion | Give the code snippet as an image (copy and paste the picture in this block). |
| Image Cropping | Give the code snippet as an image (copy and paste the picture in this block). |
| Batch Normalization | Give the code snippet as an image (copy and paste the picture in this block). |