Introduction

We have compiled multiple images of different types of rice. We're applying the concepts of image processing like morphology to measure the length and width of different types of rice

Members

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Rice Types

1. Super Tota
2. 1.5 Saal Purana Kainat
3. Kacha Super Fan
4. Kainat Steam
5. Super Kernel Naya

Picture Acquisition

Camera: Vivo V21e camera

Reference Object: Paper cut in shape of coin with diameter of 19mm

Working

Basic high level working is explained with the following steps.

Opening

We are reading the image and applying an opening so that small isolated dots can be removed.

Thresholding

Then we're thresholding the image to separate foreground and background.

Border Clearing

Clear border morphology is used to remove the images that may be touching the

Labelled Image and region props.

We're using SK Images built in functionality to get the labelled image. This gives us a labelled image on which we are getting the region props table with properties of

1. Orientation
2. Major axis
3. Minor axis
4. Diameter
5. Bounding box

Pandas dataframe.

Panda dataframe is used to store the dictionary type object returned by region props.

Image extraction, numpy and dataframe.

Dataframe is type casted into numpy, then we're using the region properties to extract the rice out of the image.

Length of image.

1. A paper cut in shape of a coin, of diameter of 19 mm is used as a reference object. Pixel pitch and length of the coin are compared to get **length of one pixel**.
2. Major axis of rice times length of one pixel gives length of rice
3. Minor axis of rice times length of one pixel gives width of rice

Storing results in CSV.

Dictionary with all the rice information is created. It then is type casted into a dataframe. Then built in function on dataframe is used to store results in a CSV