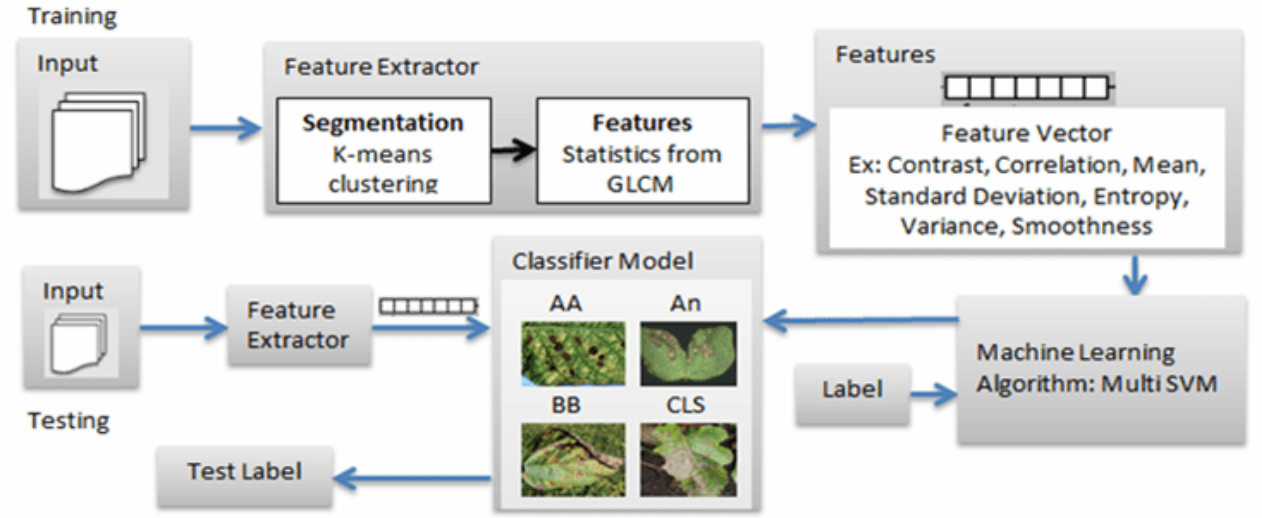
**Team ID:PNT2022TMID26099**

**Introduction to Image Processing:**

Image processing is a way to convert an image to a digital aspect and perform certain functions on it, in order to get an enhanced image or extract other useful information from it. It is a type of signal time when the input is an image, such as a video frame or image and the output can be an image or features associated with that image.

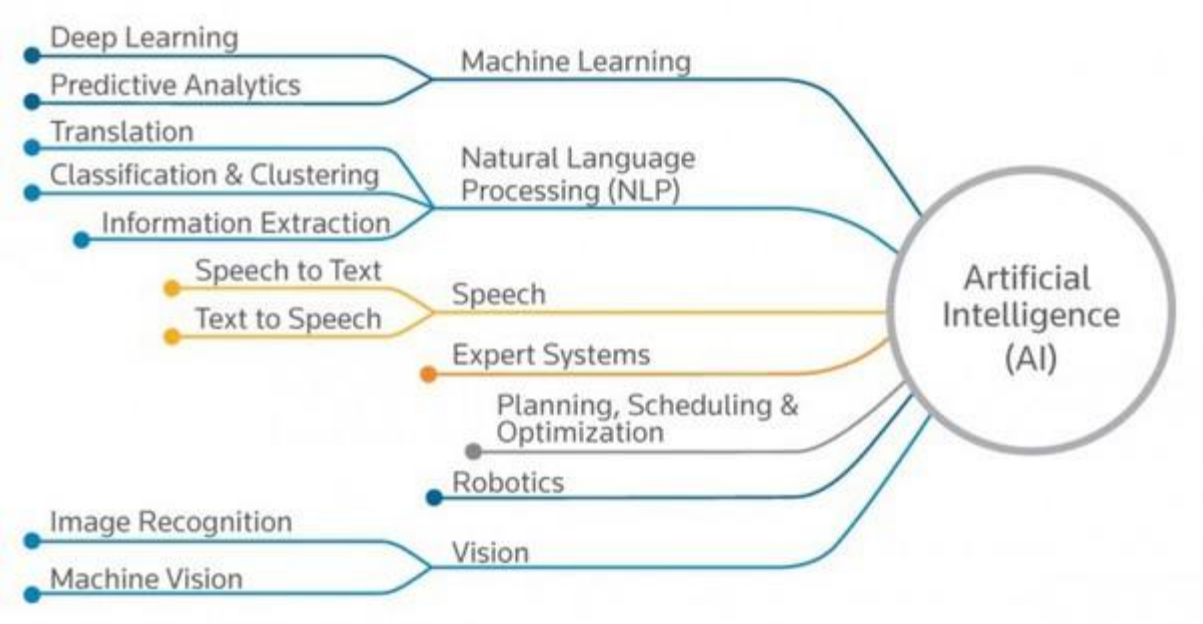



**Digital Image Processing:**

DIP focuses on developing a computer system that is able to perform processing on an image. The input of that system is a digital image and the system process that image using efficient algorithms, and gives an image as an output. The most common example is Adobe Photoshop. It is one of the widely used applications for processing digital images.

**Image Processing with Deep Learning:**

Usually, image processing can be done in various ways. You can do it with the help of machine learning or if you want detailed processing, you can use machine learning. Deep learning is a supervised way of processing images. You can do various things with the help of the processed data.




For example, if you give 100 animal images and start processing them with deep learning, it can categorize the data and give you the exact results. Deep learning is capable of categorizing animals. In the end, you will get the result where you can see the dog images aside and cat images aside. Further, one can use image processing in many other ways. Further, deep learning can label the data and can do various other things.

**How does Image Processing work with Deep learning?**

There are some easy steps in which image processing works.

1. Sensor
2. Segmentation
3. Feature extractions
4. Classification
5. Post Processing

Once the input is given, here are the phases.

**Phase 1 — Sensor**: Once the image is given to the machine, it will convert the input into the signal data. Only signal data is processed here. It will also fix the resolute, bandwidth, and all the similar things.

**Phase 2 — Segmentation**: The next phase is where the segmentation happens. This is where the machine will remove all the unnecessary things such as background and similar things. Segmentation is all about grouping various parts.

**Phase 3 — Feature Extractions**: This depends on the classification. It will detect the features in the image and classify the image accordingly.

**Phase 4 — Classification**: Once the image is classified, it will assign the image to a specific category.

**Phase 5 — Post Processing**: This is the place where the machine will decide if there are any other processing needed.

Thereafter, the final result is displayed.

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