Image Processing Workshop

# DAY 1:

Review of C language:

* Code format
* Loops (for ,while , do while)
* If else
* Functions
* Array
* Structures

Review of C++ language:

* Classes
* Namespace

Basic OpenCV Functions:

1. Mat img = imread(img location, type of image)
   * + - Imread: Reads the image from the source
       - Type of image: Colored(CV\_LOAD\_IMAGE\_COLOR)

Black and white (CV\_LOAD\_IMAGE\_GRAYSCALE)

NB : By default it takes the color image.

1. imshow(“windowname”, img): This displays the ‘img’ image, with a ‘WindowName’ on the title bar.
2. imwrite(“file address”, img): This will make changes in the stored file.
3. Mat temp(x, y, color type, maximum intensity): This is used to create an image.

Color type:

If colored: use “CV\_8UC3”

If black and white: “CV\_8UC1”

1. waitKey(x) = it tells to stop the image for mentioned millisec.
2. waitKey(0) = stop the image until next command is started.

TASK(s) completed :

* Installation of Cmake.

# DAY 2:

* Histogram
* Vignette
* Mean Blurr
* Median Blurr
* Resizing of Image
* Trackbar
* Morph
* Rotation

TASK(s) completed :

* Scale down
* Scale up
* Histogram of frequencies and intensities

DAY 3:

1. Gaussian Blur
2. Blur by varying the kernel matrix
3. Prewitts Edge detection
4. Sobel Edge detection
5. Canny Edge detection
6. Dilation and Erosion
7. Pointers

TASK(s) completed :

* Mean ,Median and Gaussian blur
* Edge detection through Prewitt operator, Sobel operator followed by Erosion and Dilation.

DAY 4:

1. Stacks
2. Queues
3. Depth First Search (DFS)
4. Breadth First Search (BFS)
5. Color Extraction

TASK(s) completed :

1. Color extraction
2. Stacks and Queues
3. DFS using recursion
4. DFS using Stacks
5. BFS using Queues

DAY 5:

1. Video capturing
2. Hough Transform
3. Contour:

Findcontours(Mat img, Contours, Hierarchy, Mode, Method)

HIERARCHY :

* Hierarchy[i][0] => next contour f same nature
* Hierarchy[i][1] => previous having same
* Hierarchy[i][2] => parent contour
* Hierarchy[i][3] => just inside contour = j
* Hierarchy[j][3] => just inside jth contour

MODE:

* CV\_RETR\_EXTERNAL => for exterior contours only.
* CV\_RETR\_LIST => stores all type of contours in an array but not maintain any hierarchy.
* CV\_RETR\_Ccomd => stores child parent contour ,can consider only three contour.
* CV\_RETR\_TREE => stores all type of contours with all hierarchies maintained.

METHOD:

* CV\_CHAIN\_APPROX\_NONE =>will not remove any point from the contour.
* CV\_CHAIN\_APPROX\_SIMPLE => tries to minimize the contour size.

TASK(s) completed :

1. BFS
2. Video capture function
3. Line drawing

# DAY 6:

1. Work on PS
2. File Handling on Arduino for Unix users
3. Basic parts of Robot
4. Arduino functioning

TASK(s) completed :

1. Work on problem statement