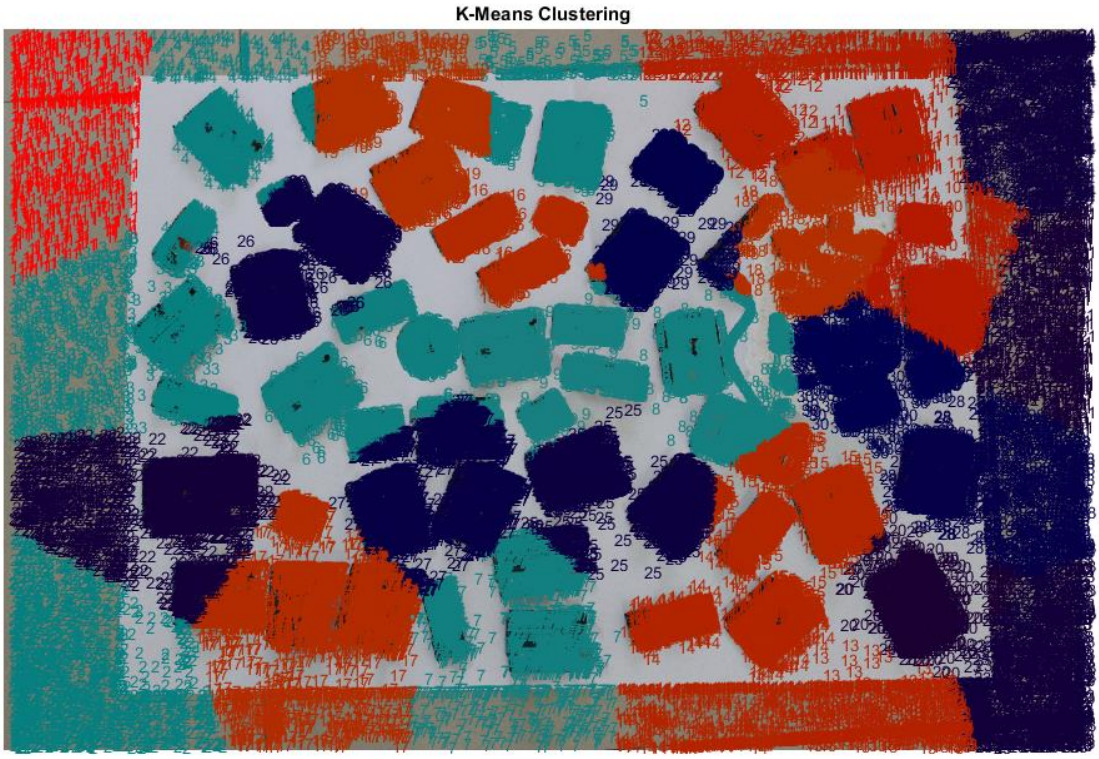
Work Done in Min Eigenvalue and SURF

Object of desire

Scene

We tried squeezing Min Eigenvalue feature into k means algorithm

The results were quite interesting



Important things to keep in mind

This above image is used without scale or orientation matching of the features or feature descriptor.

We found the min eigenvalue features of the scene image and clustered the similar points. (Based on Euclidian formula)

What you can see in the image is that min eigenvalue feature detected both objects as well as plain surfaces. Min Eigenvalue feature is very sensitive to changes in pixel values of image, even a slight change in the pixel value leads to creating a feature. Hence you see that in minimum eigenvalue feature there are a lot of features as compared to SURF

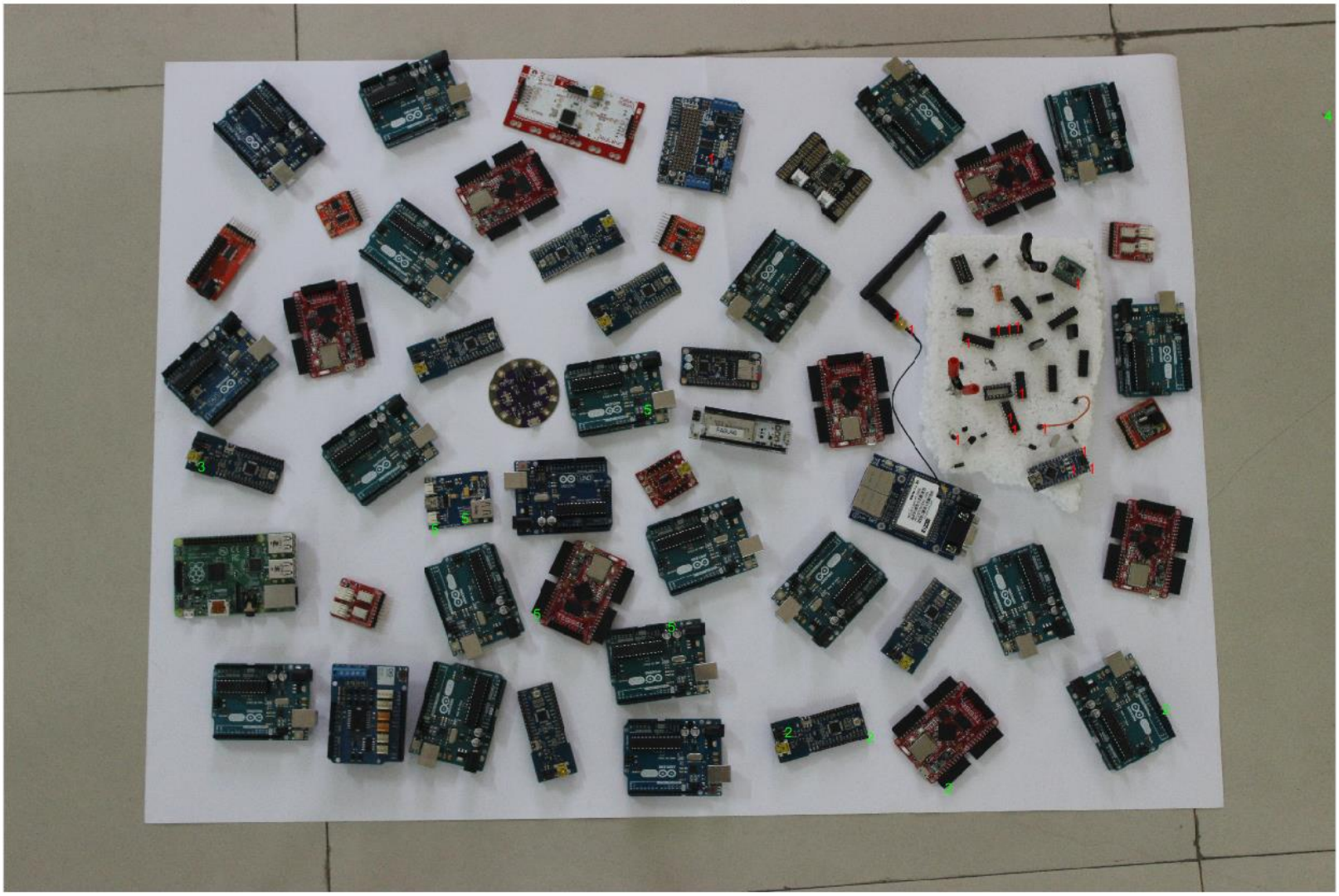
You can see the features of SURF below.

Again to remind you these features are of the image without matching the scene with the object.

After the SURF features were matched with the object, the K means algorithm was ran onto the matched features this led to the following image

The orientation descriptor database generated by the SURF feature algorithm is currently not being used to match the descriptors of minimum Eigenvalue descriptor (Since they do not match dimensionally).

We do in the future plan to match the remaining dimensions by neural network approach to increase the efficiency of algorithm.



As you can see the best cluster (Numbered 1) is the object of desire.

This cluster no 1 was obtained by first finding SURF features then applying match feature algorithm then applying K Means algorithm and then selecting that cluster having the maximum number of points.