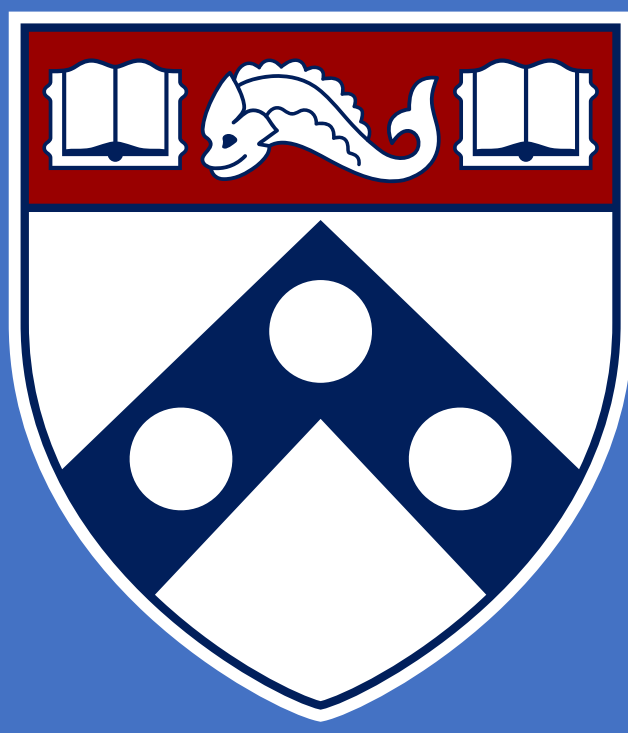# Generic Keypoint Detection for Objects in the Wild

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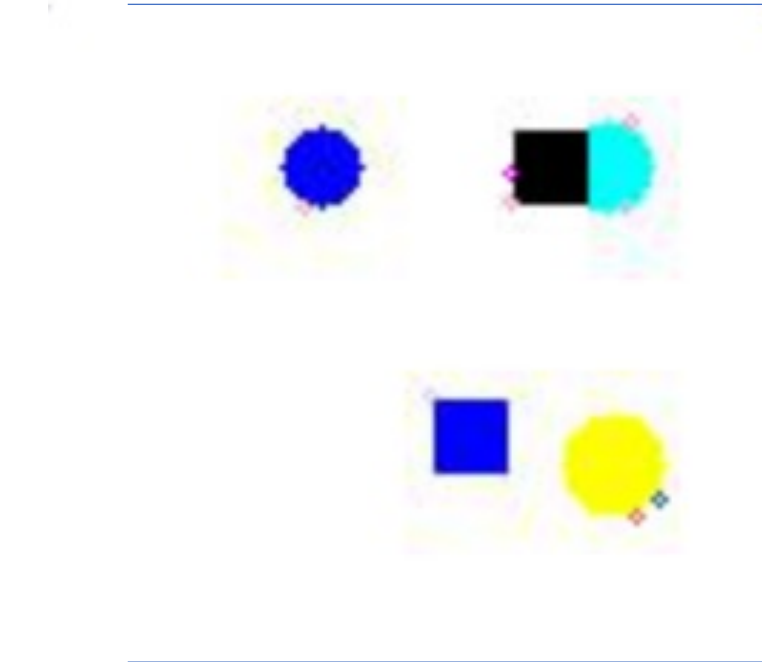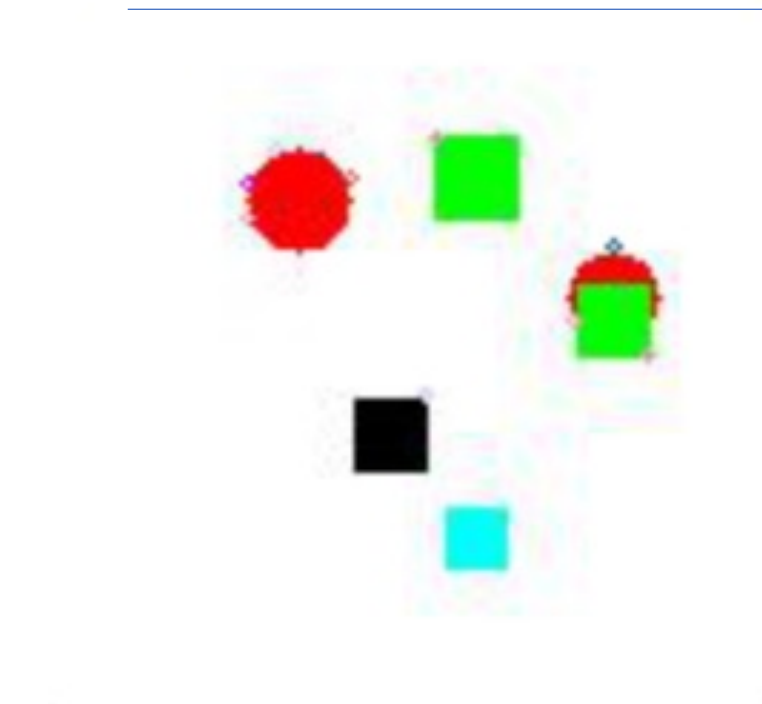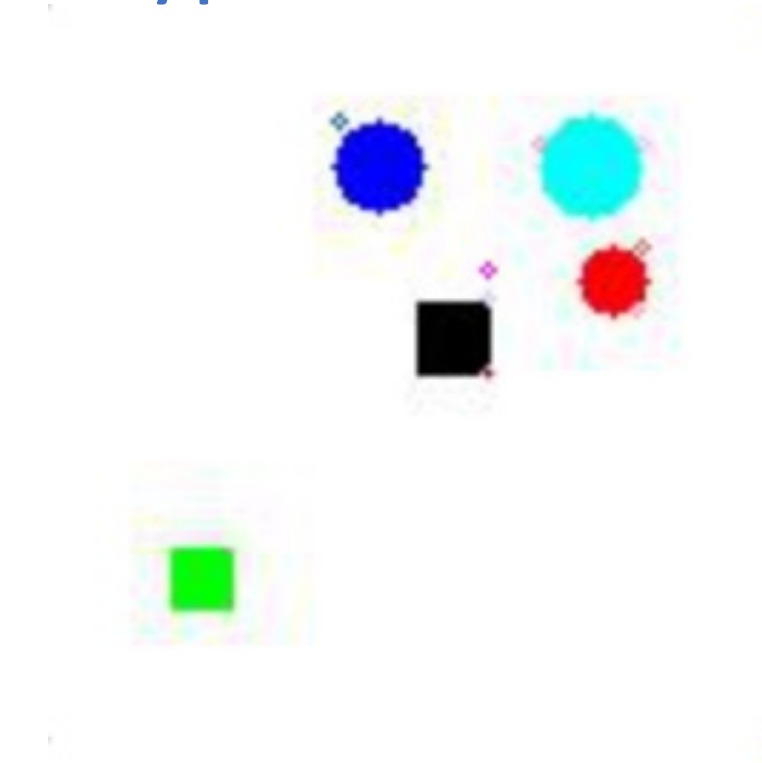University of Pennsylvania, Department of Computer and Information Science

Introduction

- Discovering keypoints (the important points in an image) can be used to create compact representations of image objects.
- Most unsupervised sparse keypoint detection methods require fine-tuning to work on previously-unseen types of images.
- There exist methods that find dense keypoint representations of generic images, like SuperPoint [1].

Methodology

- Filtering the keypoints produced from a pretrained dense keypoint detector and getting a sparse subset of them.
- Choosing the sparse subset of keypoints that can be best used to reproduce the original image.

Filtered (Sparse) Keypoints   **Original (Dense) Keypoints**
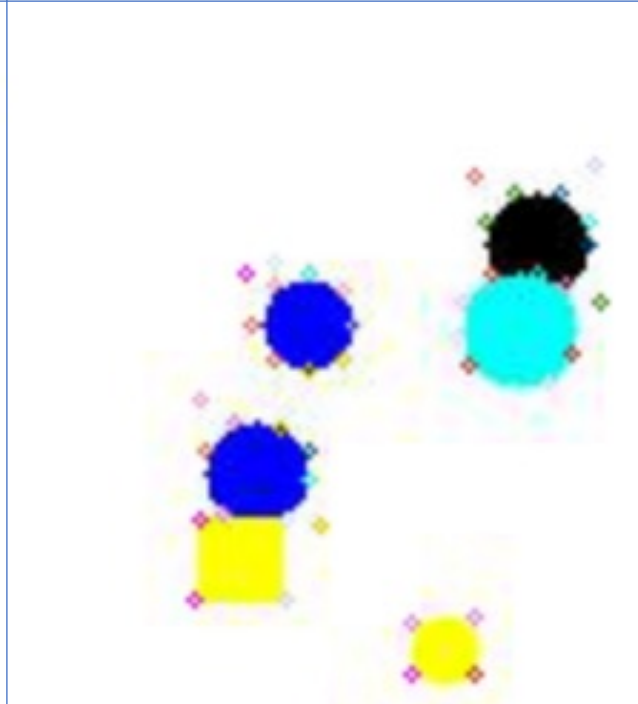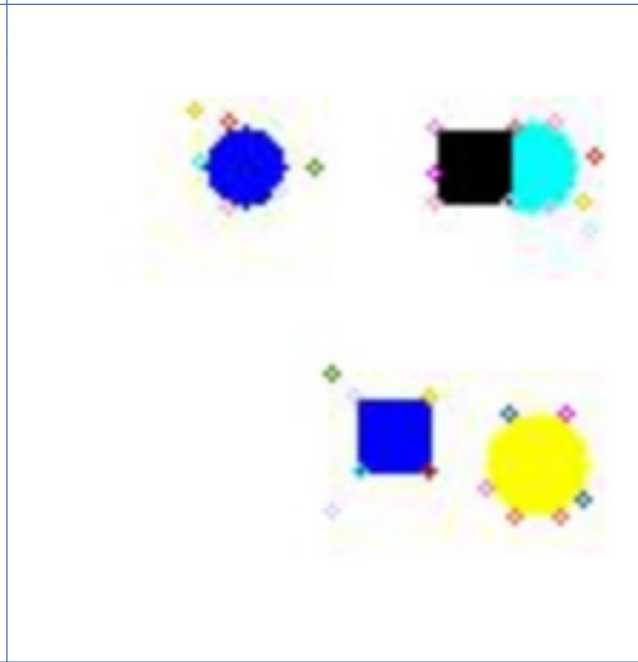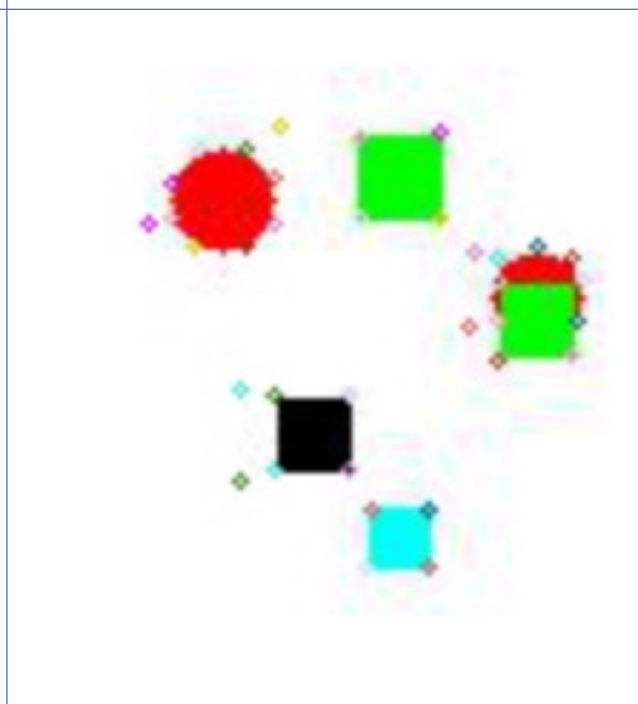
Significance

- Since the dense keypoint detection methods can generalize to previously-unseen images, this method, if successful, could also be a generic detector, thus being the first unsupervised sparse generic keypoint network.
- Sparse keypoint representations can be very useful in extracting meaning from image contents, as they as are more concise and thus more abstact than dense representations. This property can enable robots that operate under visual input to be more adaptive to different environments.

Results and Future Directions

- Method works for simple images, as shown.
- A future step is to run it on more complicated real-world or CGI images, as well as to test its ability to generalize to unseen types of images.

References

[1] D. DeTone, T. Malisiewicz, και A. Rabinovich, 'SuperPoint: Self-Supervised Interest Point Detection and Description'. arXiv, 2017.