Convolutional Neural Networks (CNNs) are the best tool to categorize the images. This classifier only labels the whole picture as a class and cannot localize the object in the picture. In this project, we want to implement an object detector using SIFT key points. After detecting the region of the object, we will classify the objects with a fine-tuned CNN.

**Goal of the project**
- Detect all the objects in the picture, i.e., Region and Label

**Comparison with Faster R-CNN**
- **Advantages:**
  - Faster than R-CNN (both running on CPU)
  - Unlike R-CNN it is not a black box
  - Detects more objects than R-CNN
- **Disadvantages:**
  - Sensitive to details
  - Regions are not so accurate
  - Both algorithms fail on super macro images

**Implementation**
- Find SIFT keypoints
- Cluster the nearest points
- Ignore other points (clusters)
- Modify the regions
- Detect objects using CNN
- Ignore the regions with low confidence

**Future Works**
- Running the algorithm on PASCAL VOC
- Making the algorithm faster
- Tuning all the thresholds
- Making the regions more accurate

**Methodology**
- Find SIFT keypoints
- Cluster the nearest points
- Ignore other points (clusters)
- Modify the regions
- Detect objects using CNN
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**Results**
- Our Algorithm
- Faster R-CNN