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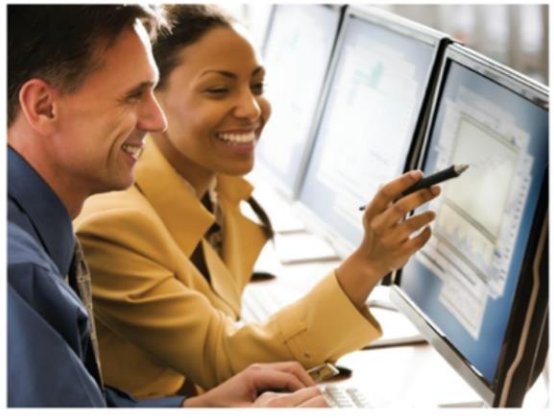
Exercises: Match Image Features

AUVSI Foundation: Computer Vision Training



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Identifying a Traffic Sign with Features

Features can be used to explore the physical characteristics of a target. In this exercise, you will write a script that uses features to detect the number of corners of traffic signs.

1. Load the yield sign image provided.
   ```
   >> load yield
   ```

2. Use the `featureDetectStart` script, or your file from the blob analysis exercises, to extract the binary mask from the video frame.

3. Detect features using the minimum eigenvalue algorithm to find the corners of the sign.

4. Use the minimum quality property to increase the quality of the output corners. Try to change the property such that only the 3 corners of the yield sign are returned.

5. **Optional 1:** Use features to identify the number of corners in a stop sign.
   ```
   >> load stop
   ```

6. **Optional 2:** Try to recognize any traffic sign in the video `vipwarnsigns.avi` using the number of returned corners.

Solution

```
>> featureDetect
```

Detect Traffic Sign with Matched Features

Matched features can be used to identify the location of a known template within a scene. In this exercise, you will write a script that uses feature matching to determine the location of a yield sign within a scene.

1. Load the template image corresponding to known a previously extracted yield target.

   ```
   >> load template
   ```

2. Load the scene image.

   ```
   >> load yield2
   ```

3. Convert the full image to grayscale.

4. Detect, extract, and match features for both the template and the scene.

5. **Optional:** Try to match the template to every frame in the video `vipwarnsigns.avi`.

Solution

```
>> matchDetect
```