

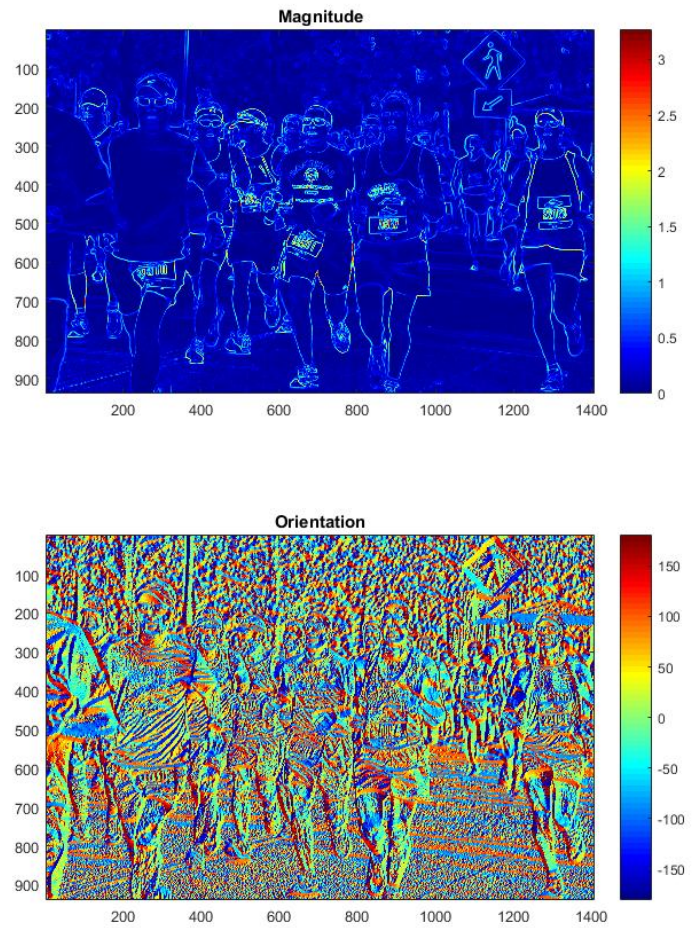
CS 116 Homework 4

Chang Gao

1. Gradient Code Test



original image



test result

2. Detection Code Test

(a) Traffic Sign Images



target



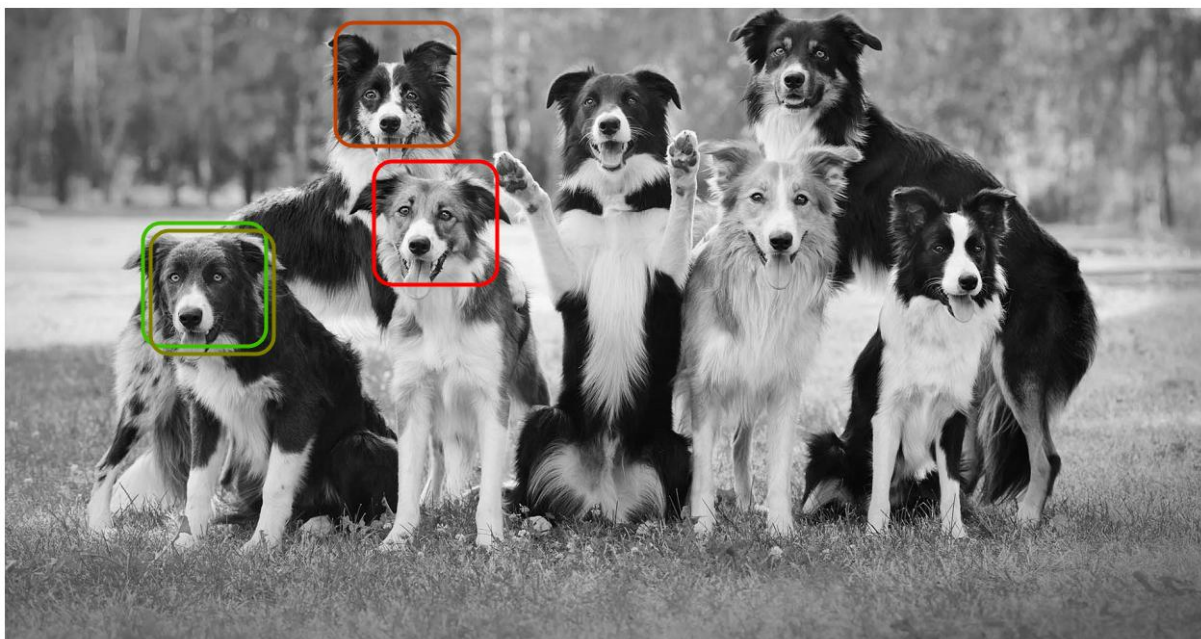
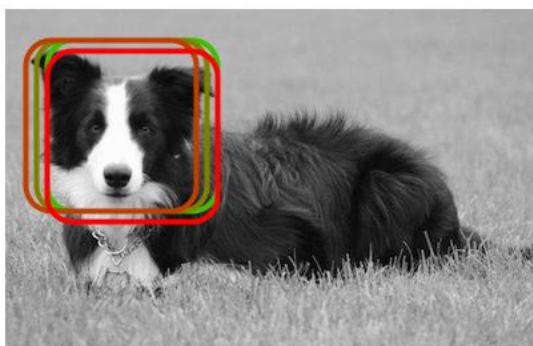
Sign Post Reflector in typical crosswalk application

result

(b) Collie Images



target



result

(c) Discussion

The detector tends to work when the patches to be detected in the test image are (1) of similar size of the target patch (2) without drastic deformation or huge change in orientation compared with the target patch, and tends to fail otherwise. If size changes it may not be able to capture the whole test patch (when too large), or it may capture background info (when too small) thus produces worse cross-correlation score. If orientation changes or shape changes drastically, the detection may also fail when cross-correlating the feature map. A solution could be (1) rotate and resize the target patch in to a group/mipmap of target patches to compare with (2) pre-process the test image (for example, do edge detection first to generate interest regions and only compare the patches on them).