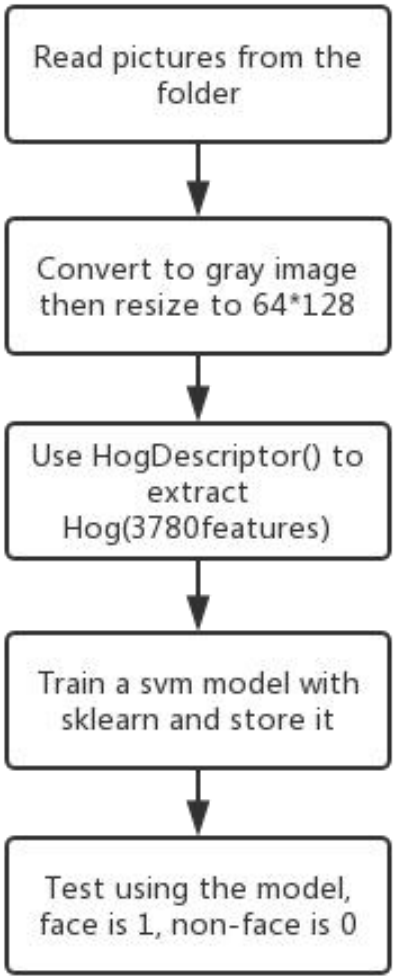
**Face Detection with HoG features Report**

## 1. Workflow



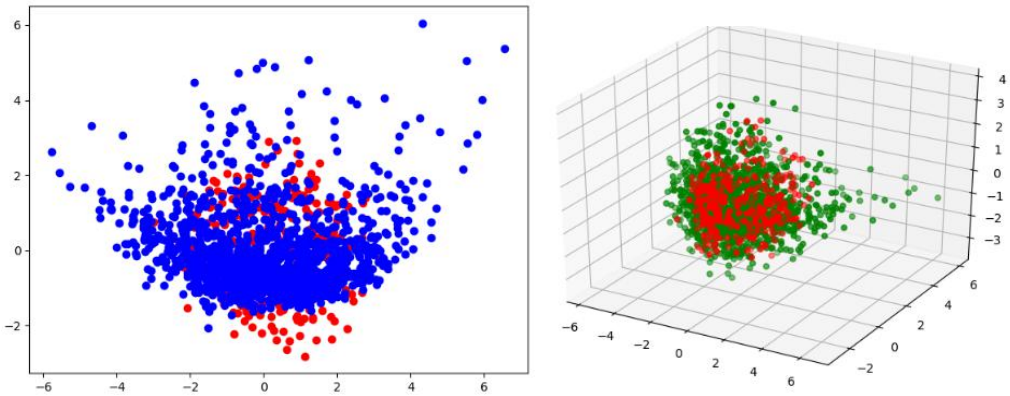

**1.1 Use opencv to read all the images in the folder.**

**1.2 Convert images to grayscale images to reduce dimensions.**

**1.3 Resize the image to ensure that the hog features are the same length.**

**1.4 Use HOGDescriptor() for hog feature extraction and save them to the list.**

**1.5 Try to use PCA to reduce dimension, but no obvious separation is found through visualization.(As shown below).So use all the features to train.**



**1.6 Use the svm trainer in sklearn to train the model and save it.**

**1.7 Use the face image separated from the 'n' file for testing.**

**1.8 If it is a face then output 1, if not then output 0.**

**1.9 Test the p folder with an accuracy of 0.8580,n folder with an recognition rate 0.0356.**

**2. Findings**

**2.1 The default window of the function HOGDescriptor() is 64*128. If the image resize is 64*64, the program will not be executed.**

**2.2 Using too many negative samples will reduce my accuracy to very low, and I get satisfactory results when I use positive and negative samples of 300:300.**