



## Face Recognition Using Machine Learning

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### Abstract

Face recognition has become an essential part of the unlocking system of mobiles and computers. Easiness to use is accelerating its ubiquity. Facebook uses this technology to tag our friends automatically. Baidu is using it instead of ID cards to allow their employees to enter their offices. Google Photos uses it to separate pictures of different people. So that when we want to see pictures of a person we can easily get all pictures of that person at a single place. In our seminar, we will be demystifying this technology. We are going to explain how does it locate faces in a picture, how does it convert a picture of a face to an appropriate format for identification, and how does it identify the face. We will discuss Histogram of Oriented Gradients (HOG), Face Landmark Estimation, Siamese Network, and Triplet Loss to explain how does this technology work. HOG is a feature descriptor used to detect objects in images. In this case, HOG is used to detect faces. Facial landmark is used to align face in the forward direction. Siamese Network is used to compare the similarity between two faces. Triplet Loss act as loss function for training our similarity function used to identify faces. These methods are used together to recognize faces present in an image.