Notes

Libraries:
- Tensorflow
- Pytorch
- Sci Kit-Learns
  - https://scikit-learn.org/stable/
  - Open Source commercially usable
  - Efficient for predictive data analysis
  - Well documented
  - Tensorflow is much more extensive
  - Userfriendly

Possible models:
- Possible adaptation of existing face recognition models (issues with identifiers)
  - Issues with identifiers
  - Not going to be an accurate way to represent the data we will be given
  - Hard to train
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- Euclidean Distance Models
  -Use when calculating the distance between two rows of data containing numerical values
  - Measure the 'similarity between vectors
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- MSE/SSIM Model
  - Mean square error
  - Structural similarity index
  - https://towardsdatascience.com/image-classification-using-ssim-34e549ec6e12
  - Simple technique in order to see how similar 2 images are
  - MSE will calculate the mean square error, SSIM will look for similarities of pixels between two images
  - SSIM takes texture into account
  - https://scikit-image.org/docs/dev/auto_examples/transform/plot_ssim.html
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- RootSIFT Model

- Used to describe and detect features within digital images, through locating key points and descriptors, often used for object recognition
- What is a SIFT descriptor?
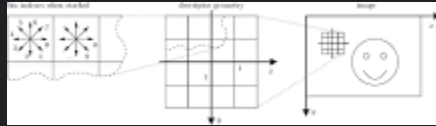
- A SIFT descriptor is **a 3-D spatial histogram of the image gradients in characterizing the appearance of a keypoint**. The gradient at each pixel is regarded as a sample of a three-dimensional elementary feature vector, formed by the pixel location and the gradient orientation.
- RootSIFT is an enhanced SIFT descriptor. SIFT has been the widely used technique for feature extraction due to its invariance to scale, rotation, illumination, viewpoint, and translations. So the enhancement to SIFT to detect drowsy features has made an outcome more likely. (https://www.sciencedirect.com/science/article/pii/S1877050920310127)
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- Siamese Networks
-https://www.pyimagesearch.com/2020/11/23/building-image-pairs-for-siamese-networks-with-python/

-Powerful for face recognition

- Advanced training procedures
- https://www.cs.cmu.edu/~rsalakhu/papers/oneshot1.pdf
- Extensive training time required
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