**About the project Human fall detection:**

**Video classification:**

**Video:** Video is nothing but set of images assembled in sequential manner. Those images are called as frames. Suppose frame rate is mentioned as 10fps means in that video 10 frames will be displayed per sec sequentially. Extracting features from frames and classify the frames based on the extracted features is same as that of we do for image classification using CNN (convolution neural networks) techniques.

**Python libraries required**:

All libraries we use for CNN image classification like Pandas, NumPy, Scikit learn, Keras and matplotlib will be used for video classification along with ‘OpenCV’ for reading videos. TensorFlow for large scale neural network modelling.

**My Understanding on the project:**

1. Creating data set of images by collecting frames from the captured videos.
2. Image processing to be done on the images to extract feature map of the images (like convolution with filters, pooling) and convert the data to 1-D array.

TensorFlow framework is to be used as mentioned in reference that it can be used to create large scale neural networks with many layers like VGGNet and ResNet architectures etc.

1. Open Pose is a deep learning frame works which identifies around 17 key points (like ears, nose and hands etc) of a human body from the images. Human Skeleton will be developed based on this key points identification. It will be used for different pose estimations of the human body.
2. Using the skeleton co-ordinates, videos can be labeled to falling and non-falling category.
3. Using this data, a model will be trained, fine-tuned the parameters of the model and test its accuracy for new videos.

I have gone through the video classification by analytical Vidhya site (<https://www.analyticsvidhya.com/blog/2019/09/step-by-step-deep-learning-tutorial-video-classification-python/>) and understood how a video will be handled in python environment and understood the examples given to calculating screen time of an actor (tom and jerry video) (<https://www.analyticsvidhya.com/blog/2018/09/deep-learning-video-classification-python/>).

Earlier, I have used neural networks to build non-linear regression model. With that motivation I started doing this project. I have gone through handpicked references (<https://towardsdatascience.com/wtf-is-image-classification-8e78a8235acb>**,** ) mentioned in site and lectures of Deep mind x UCL related CNN application for image classification. I have understood all the steps involved in such as convolution layer, pooling layer to create feature map for an image. and I have implemented cat and dog classification model using VGG16 model mentioned in tom and jerry screen time estimation in a video by analytical Vidhya site. I have gone through object detection (classification + localization) using R-CNN, Fast RCNN and YOLO methods mentioned in papers attached in reference (<https://machinelearningmastery.com/object-recognition-with-deep-learning/>). Iam continuing to learn RNN and LSTM techniques.

I have got less exposure on position estimation in Open Pose. Can you please suggest any video lectures for that?