Design Choices

## Input Structure

The current input structure is a choice between running a single video through the pipeline and analyzing that assuming a single action is perform or feeding in a list of videos for the pipeline to process. However, the pipeline doesn’t consider that certain segments of the given video may contain multiple actions that are required to be processed separately. To mitigate the issue of misclassification of video clips within a given video, we brainstormed two main solutions to the issue. One being the cropping of the clip, either through the pipeline or in the application, to a size that will likely result in lower rates of misclassifications (possibly 10 second clips). Or secondly retrieving the classification percentages and timecodes to internally extract the areas that relate to activities. The first being an easy solution that will likely capture the required classifications on average but with will contain errors in data. With the second being the more accurate and precise manner, however requiring extensive knowledge of the model which our team doesn’t possess yet. Overall the second method would be the desired solution but would require more understanding of the model, so it will be left as an extension for now and the first will be implemented. ­­­­­

A method to break down the given videos into segments of a given length could be processed within the io\_data.py file, as it’s where the videos are formatted and processed. This could be done by altering the current code and feeding clips into the full model. Or previous to the model even being run, the application could provide video length specifications into a python script to crop the videos. This would require the application to give the filename and length specification which would then run a python video preprocessing file. This would mean that the models code would remain unedited and a simple python script would need to be run from the application.

A video processing script has been found to fit the needs of the project, which takes an input of an MP4’s filename and a specified segment size, through command line and then cuts the video to a chosen size. This script will require some changes to fit the purposes of the model, such as directly outputting to the model and modifying the application to cater for this change. The script also has room to add in extra video preprocessing functionality if required, such as model output formatting and resizing the video length if it’s larger than the model can handle. The computer specifications should be implemented as to not overload the model, this could be handled in this section.

## Output Structure

The output structure will change depending on the chosen input, however assuming we’re using the video preprocessing script, it would simply require the segment information to be stored before processing. This would allow for dynamic changes to help with identifying issues.