**Video Outline**

Project background:

Our project has been based on computer vision and image processing. Arthur Murray Dance Studios is ultimately trying to create tools for helping the process of judging professional dance competitions. Our main goal is researching and designing a method for recording a sance from multple angles in order to create a 3D representation of the dance.

The design needs to have a UI that is capable of viewing the 3D model from multiple angles. Our solution to this issue is a dance space rigged with multiple Kinect cameras. Currently each Kinect needs to be connected to an individual computer due to the high USB bandwidth required for recording Kinect video. Kinects have a depth camera, as well as having an SDK that has methods for tracking the skeletons of human bodies in its field of view. This means that we can represent each body as an array of 3D vectors, where each vector is the position of a joint on the human body.

In order to make comparisons between the joint positions recorded by each Kinect, we created an algorithm to transform the vectors so that each vector is relative to the position of one master Kinect, rather than the Kinect that recorded the data. We have also come up with an algorithm for combining the vectors once they have been transformed, in order to create the final representation of each human body within the frame.

This combined representation is passed to Unity, and, by utilising a modified version of a Kinect unity asset as well as a custom built UI, the model is rendered.

I will now demonstrate the current state of our prototype.

The UI allows zooming and rotating around the model during playback. Currently the model is just the wireframe of the human body because the main focus for Prototype One was research and getting a basic prototype working, but we are aiming to improve the model this coming term.

The main technologies used have been Unity and the depth sensors on the kinect v2s.

To summarise what we have achieved so far is merging skeletal data from 2 kinects and capturing this into the model you have just seen in our demonstration. We are team 1 and thank you for listening.