Project Assignment 3: Program Description

Our project will consist of using OpenCV, an open source library for virtual vision and object tracking. Specifically, we will demonstrate it with smaller objects like golf balls or tennis balls. Using the OpenCV library, we will first have to use the components to determine a method to track the object (tracking color, tracking change in location, etc) Then, we will need to calibrate it so that it can recognize smaller objects through the webcam or a video. Once this basic feature is implemented, we will begin by wrapping it as a separate class and using it to record the information we need for tracking. Our main program will have to accomplish three things: first, it will need to run the object recognition to find the object, second, it will need to continue to track this object's location and record those coordinates, finally, it will need to overlay an image of the user's choosing on the moving object by using the coordinates captured in the previous step.

The program will be contained in a media player esque window which will allow a user to select an input video or use a web-cam in order to begin the program's real application. Then they will be asked for an object to motion track, the selection will be done by the user selecting an object with their cursor. This object will then be tracked using the OpenCV libraries, and the coordinates of the object shall be stored in memory as a vector of KeyFrames, which will then used in order to overlay another image (of the user's selection) on top. These overlay images will come from a set of predefined objects, which all come from the same parent class OverlayObject, which we will create in order to use polymorphism and simplify our task. The OverlayObject class is an abstract base class, meaning each of the objects will have to define the virtual draw() function, which will allow for custom effects (ex: static image, rotation, color changing, etc) to take place during the drawing of the overlay to the screen.