**Homework #1 Report  
[CSIC30108] Computer Graphics 2022**

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1. **Introduction:**

In this homework, our goal is to implement a robot arm which is capable of catching the target object through OpenGL, glfw, glm, and the architecture template given. The robot arm implemented is conposed of a base, three arms, and two joints. We should be able to turn the whole robot implemented on its base. Besides, the robot should be able to rotate its joints based on the keyboard controls of its user.

When catching the target object, as shown in the following figure, we will have a tolerance distance and a catch position offset. The catch position will be at the endpoint of the catch position offset. If the distance between the endpoint and the center of the object is smaller than the tolerance, as the user presses the space bar, the robot arm will catch the target object. If the user releases the space bar, the robot arm will release the target object at its current position, and the robot arm should be able to catch the object as the same way at the previous position which the target object was released.

(put a figure of the tolerance of the endpoint of the arm)

1. **Implementation Details:**
2. **Result**

(place a figure of the results of my robot arm)

1. **Problems Encountered**
   1. **Render the first unit cylinder**

* Set up the transfer and the pop/push matrix functions
* Calculate the position of the endpoint of the robot arm
* Catch the object without turning the target object
* Let the object to stop in the air when release
* Catch the object again from the air(?)