CET CPET-563 Embedded Systems Design II **Dr. Kaputa**
Lab 2

Introduction:

For this lab you will create a Matlab GUI to provide a method to enter the tennis ball centroid [x,y] locations for both the left and right camera and you will compute and display and the X, Y, and Z position of the ball. Your module:

- shall provide a method to enter the centroid x,y position of the ball in the left image in pixels
- shall provide a method to enter the centroid x,y position of the ball in the right image in pixels
- shall compute and display the X,Y,Z distance of the ball in meters
- assume cxLeft and xyLeft are just half the width and height of the image

The image size is 752x480 pixels and you can use the below equations to compute X,Y,Z of the ball:

```
Z = (b * f)/(abs((x1-cxLeft)-(x2-cxRight))*pixelSize);

X = (Z * (x1-cxLeft)*pixelSize)/f;

Y = (Z * (y1-cyLeft)*pixelSize)/f;
```

Due Date:

You have exactly 7 days [168 hrs] till you need to submit the lab.

Lab Submission:

There are two ways to submit the lab:

1] Demonstrate functionality in the physical lab classroom and receive a signoff

2] Submit a video or screen shot demonstrating functionality to the below link:

https://u.pcloud.com/#page=puplink&code=uEakZOqVPqCnFvpLU1p5j6BQdbhg2JLhX

Grading:

Labs will be graded against the below rubric. Late labs will get a 0.

Grade	Description
0	Lab handed in late, or not handed in
1	Poor quality
2	Good quality