Thirsty Crow

Task 0 - Flex Printing and Arena Preparation

1. Flex Printing

Please find the *Thirsty_Crow_Arena.pdf* file within the Task 2 folder.

- You must carry the *Thirsty_Crow_Arena.pdf* file in any storage device to the vendor who prints the flex sheet.
- Dimensions of the arena can be viewed in the .pdf file by pressing CTRL+D in Adobe Reader. For your reference and verification, the flex sheet to be printed should be of dimension **230cm x 245cm (7.5 feet x 8 feet approx)**.
- Team is not allowed to make any changes in the .pdf file. Any team making such manipulations will be disqualified from the competition.

Instructions for Vendor

- The vendor must print the arena directly from .pdf file.
- The vendor cannot make any changes in the .pdf file provided for printing.
- If the vendor is using the CMYK color profile for printing, he must set the K value to 100 as that would give perfect black color for the black lines of the arena.

General Instructions for keeping the flex sheet in good condition:

- Leave the sheet open for about 30 minutes to dry in air after printing. After this, you can roll it and bring home.
- Do not fold the flex sheet. Always keep it rolled after using it.
- You will be using the printed flex sheet throughout the competition, so the teams are advised to store the rolled up flex sheet in a dry safe place.

2. Setting up the Webcam

In this theme, teams are required to set up a sideways camera setup as shown in Figure 1.

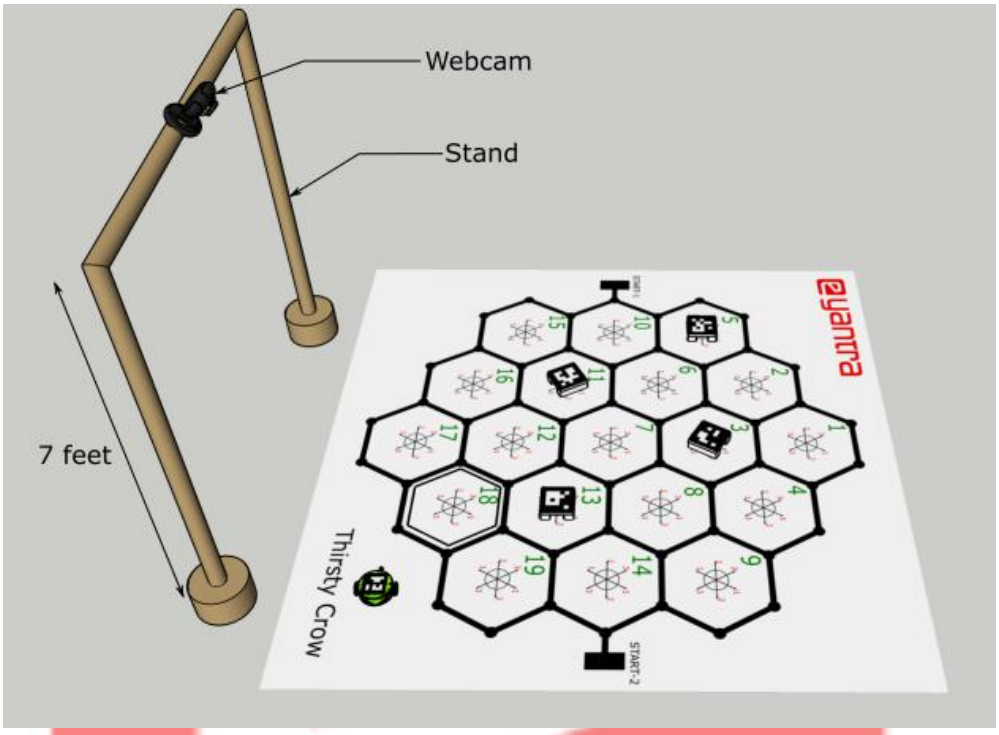

Figure 1: Webcam Setup

To get a sideways view of the Arena, a stand needs to be constructed to mount the Webcam at a height of 7 feet and capturing the Arena from an approximate 45 degree angle.

The webcam once mounted should be able to capture the whole Arena in the camera frame.

3. AR_Object Construction

Total 10 AR_Objects need to be constructed from ArUco markers with ID 0-9. ArUco Markers can be printed from the *ArUco_markers.pdf* given in Task 2 folder.

The dimensions of AR_Objects are given in Figure 2.

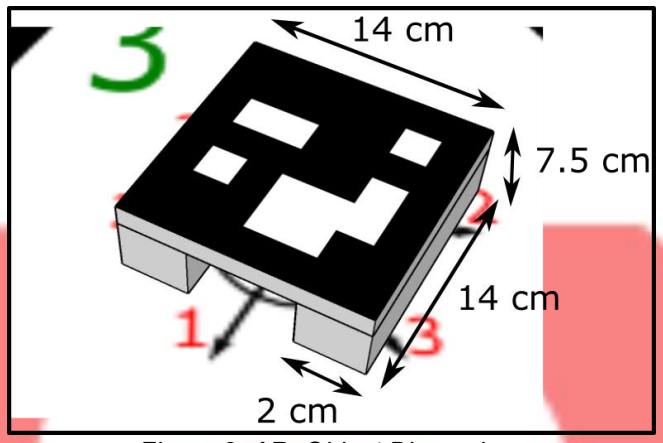

Figure 2: AR_Object Dimensions

The length and breadth of ArUco marker is 14cm. The height of AR_Object is 7.5cm. The AR_Object is supported by 2 thermocol support structures each of dimensions 14 x 2 x 7.5 cm

Materials required to construct the AR_Objects:

1. Thermocol Sheets
2. Sunboard
3. A4 sheets for printing the ArUco markers

Steps to be followed:

1. Cut out two blocks of 14cm x 7cm x 2cm from thermocol sheet as shown in Figure 3.

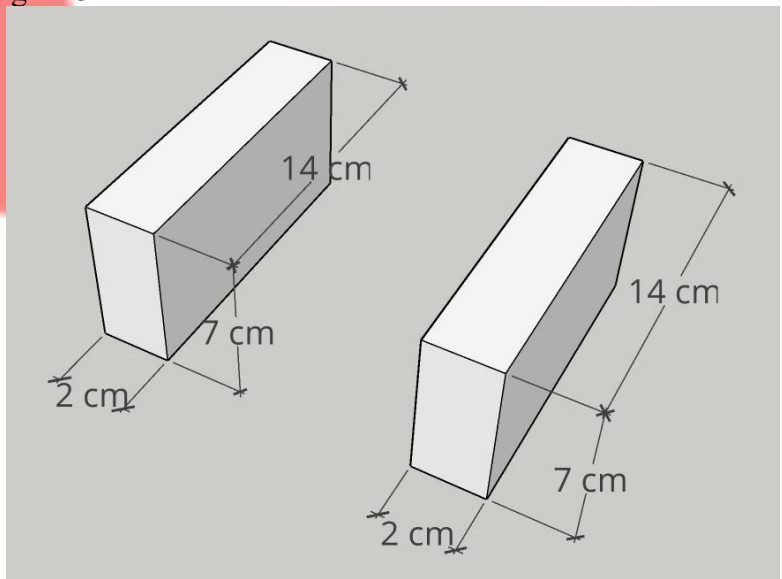

Figure 3: Thermocol Blocks

2. Cut the Sunboard into square sheet of dimensions 14cm x 14cm. Use Sunboard of 5mm thickness as shown in Figure 4

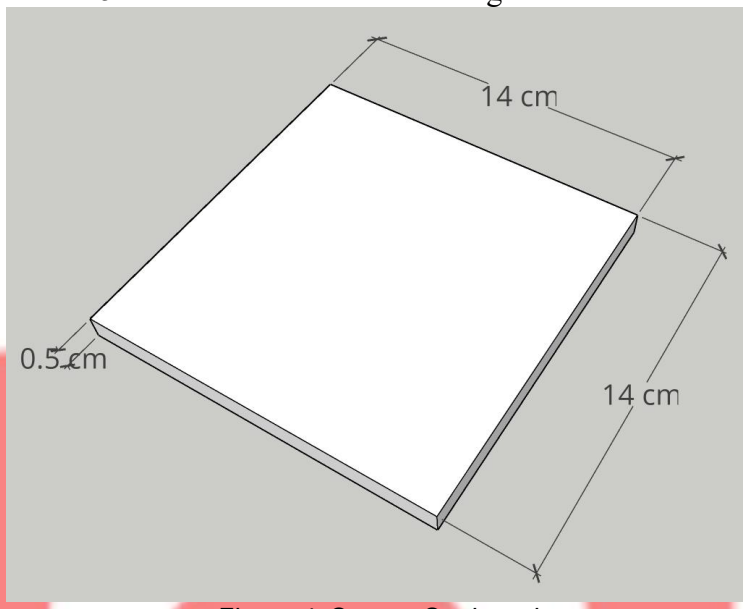

Figure 4: Square Sunboard

3. Paste the ArUco marker on the Sunboard using glue or double sided tape as shown in Figure 5.

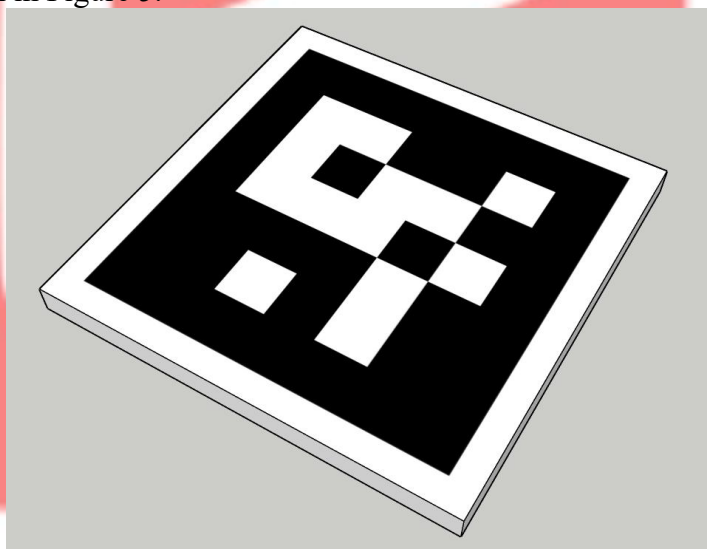

Figure 5: ArUco marker

4. Place the ArUco marker on the 2 thermocol blocks to create the AR_Objects as shown in Figure 6.

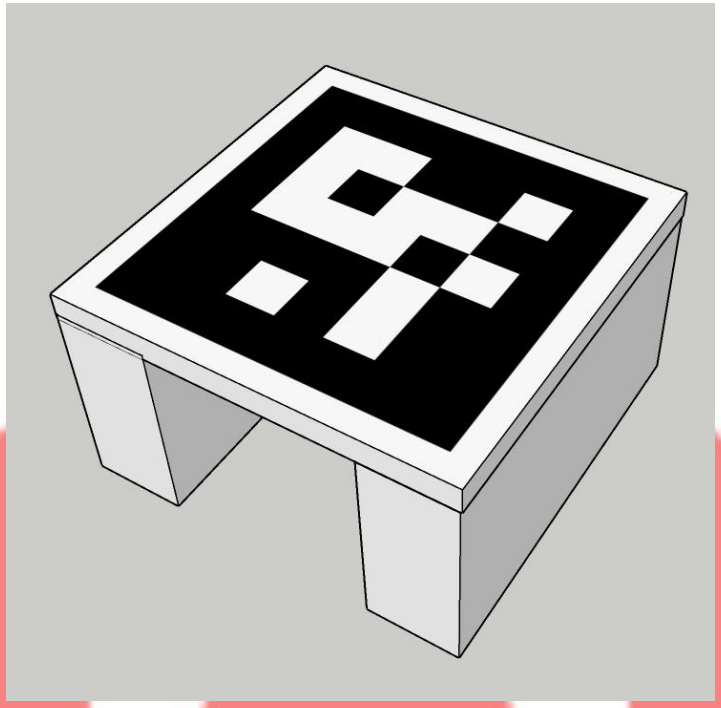

Figure 6: AR_Object

4. Final Arena Photo

Once you have completed all the above steps, now you have to complete the final task which is to generate the Arena Photo.

- Set up the Arena as per Figure 7. Use AR_Objects with IDs 0, 1 and 2 and place them in the indicated position as depicted.

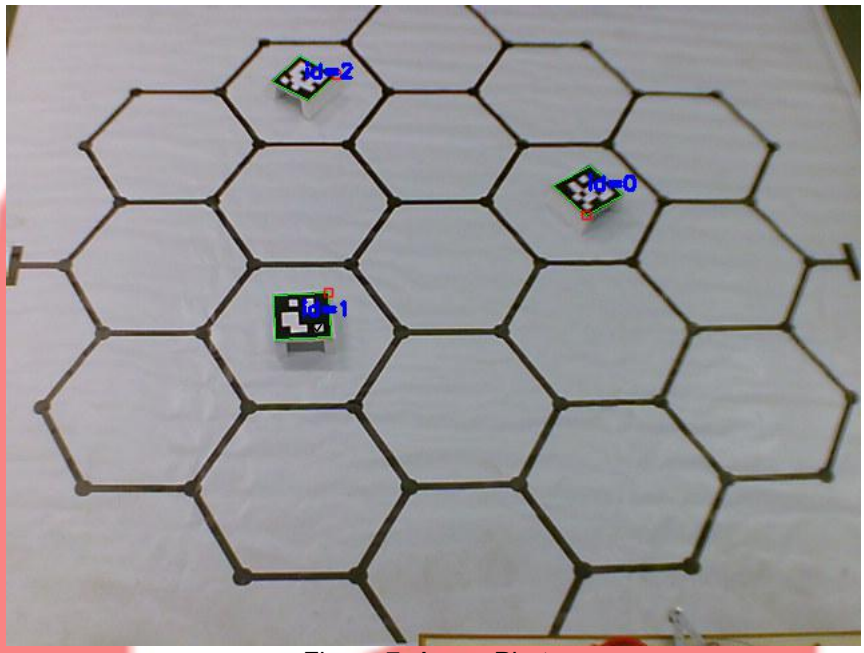

Figure 7: Arena Photo

- Please find the "*Say_Cheese.py*" in the Task 2 folder.
- When you have setup the Arena, connect the Webcam to your computer and run the "*Say_Cheese.py*". The camera frame will appear in an OpenCV window.
- Make sure all the AR_Objects are being detected in the Arena. If an AR_Object is successfully detected, the ID of the ArUco marker will appear next to it in the OpenCV window (as shown in Figure 7).
- Press 'k' to capture the photo of the Arena with all ArUco markers being detected.

5. Submission Instructions

- Login to e-Yantra Portal and go to Task 2 tab.
- Re-name the Arena Image to **Task_2_arena.png**
- Go to the Upload section and upload the Arena image.