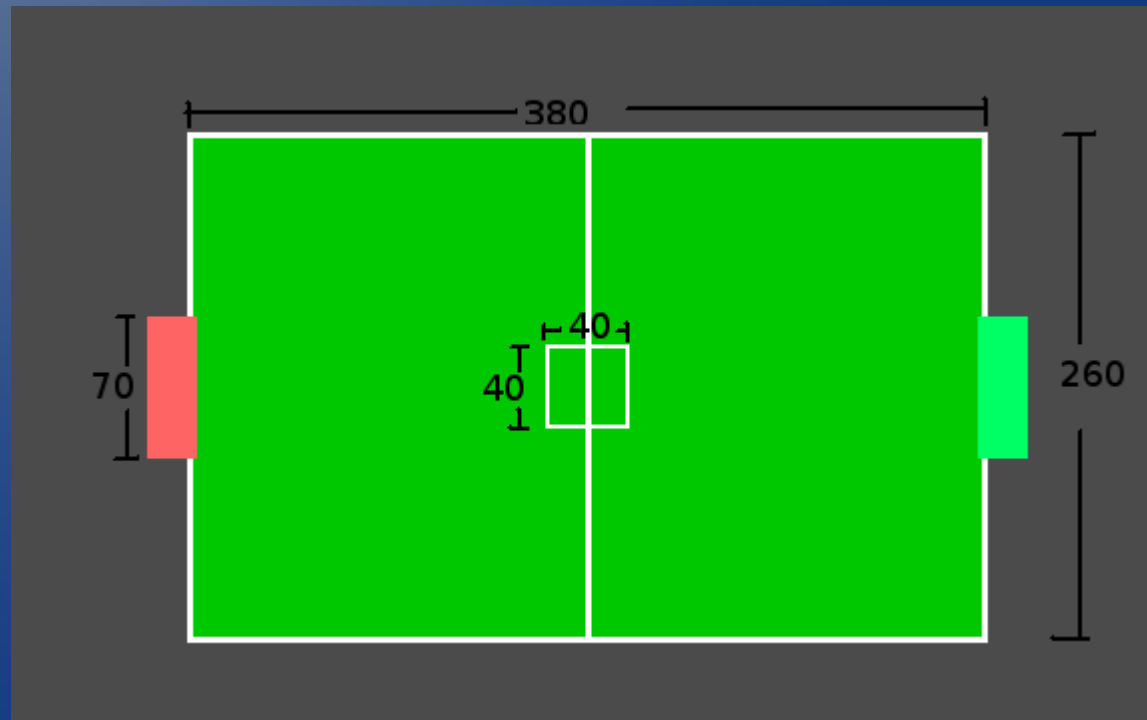


# Smurfv Stadium and Soccer Setup

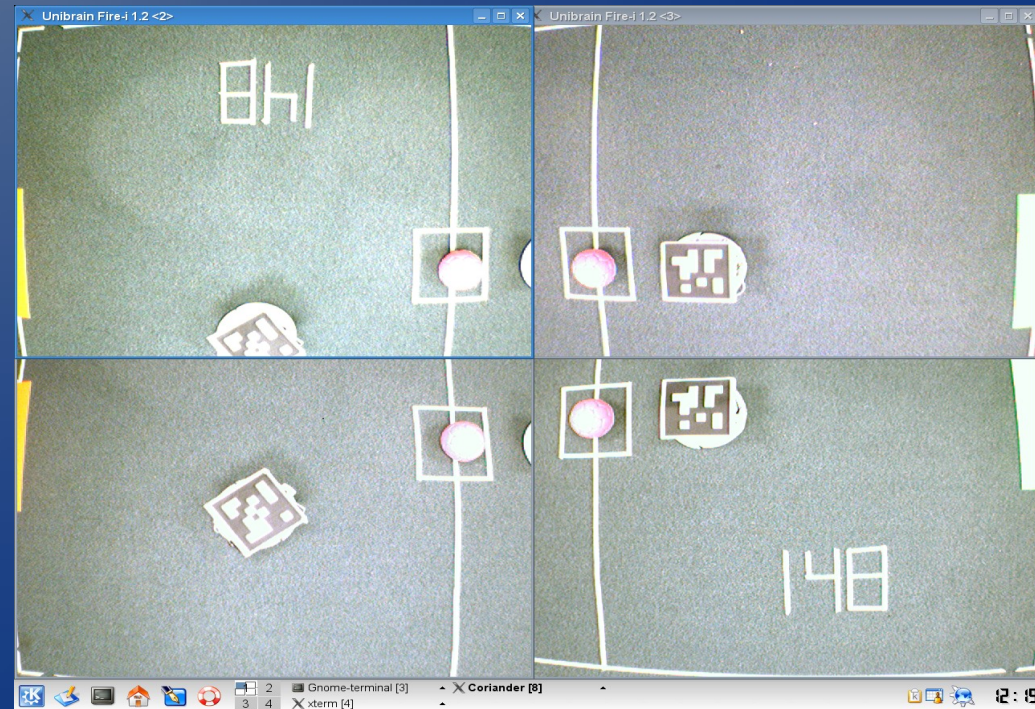
# 404 Soccer Setup

- Dimensions: 3.8m in width by 2.6m in height
- Goals: 0.7m in width and slightly extend past end boundary
- (0,0): in corner opposite foxwood/sandworm
- Yaw: 0 (radians) if robot is facing wall opposite foxwood/sandworm. Turning right increases angle of yaw until  $\pi$ ; turning left decreases until  $\pi$



# Overhead Localization

- External localization system that provides estimates of current robot pose, obstacles and ball location.
- 4 cameras mounted on ceiling: 1 and 2 connect to sandworm, 3 and 4 connect to foxwood.
- `/course/cs148/bin/coriander` to calibrate all 4 overhead cameras.
- `brightness=305`  
`auto exposure=350`  
`sharpness=100`  
`white balance-blue=100`  
`white balance-red=75`
- ARTags: identified by id



# Localization Infrastructure

- **tdlocc**: Top-down Localization Client that connects to a specific camera and analyzes pictures taken by it. Estimates location and bearing of all ARTags and location of yellow ball. Sends data packet containing all the objects it sees to loc server over the network using UDP.
- **tdlocs**: Top-down Localization Server that listens for incoming packets from loc clients and fuses object estimates into a list containing info on each object's last known pose.
- **smurvStadium**: Java application that displays all the packets it receives from the server graphically. That is, displays all objects and their pose estimates on the screen.

# To Run the Localization System

- `/course/cs148/bin/coriander` to calibrate all 4 cameras
- `/course/cs148/bin/start_tdlocs.sh` on sandworm to start localization server.
- `/course/cs148/bin/start_tdlocc_sandworm.sh` on sandworm to start localization client on sandworm.
- `/course/cs148/bin/start_tdlocc_foxwood.sh` on foxwood to start localization client on foxwood.
- `/course/cs148/bin/start_smurvStadium.sh` on sandworm to view the objects seen by the localization system.
- Note: smurv stadium can't run on the same computer as your client as both need to access the same UDP port.
- `client.cpp` already receives localization information and shows you how to process packets.

# Reminders

- All lights in 404 should be turned on
- Unplug overhead cameras from sandworm/foxwood when you leave 404
- End all tdloc processes before you logoff. If there are processes running in the background when you log off, the next person won't be able to access the cameras. Run *stop\_tdlocc.sh* and/or *ps -aux | grep tdloc* to see if a process is left running and then manually kill.