

- Project Description
- Topics Covered
- Possible Components
- Estimated Cost

Features

- Gamepad(s)
- Bluetooth (robot-arena)
- Computer Vision (Overhead camera)
- Possible instant replay of shots (low priority)
- TV display for keeping score and playing sounds etc.
- Mobile robot to pick up and shoot basketball
 - Holonomic drive (3 60degree omni)
 - Spring-loaded launcher
 - Ball pickup
- Flashy arena exterior

What size ball do we want to use? Look up different size and material balls.

How do we pick up the ball?

What's the lowest computational power that we need.

Should we lock the angle of the shot? What angle should this be locked at?

The court is regulation size but shrunk down to fit on a table. (Trying 1/8th scale half court)

A camera at the top of the arena to track the ball and robot with a wide enough field of view to track the whole field. Make sure the camera has a high enough resolution to see everything clearly but a low enough resolution to compute the vision successfully.

- Pixie cam
- Webcam
- Other

Gazebo or Unity?

Questions to ask doctor Riche

- Can we use a pi/jetson? - **Yes, anything that requires an OS (Computer vision, machine learning, etc.) can have an embedded computer that interfaces with a PCB. Ex. A Jetson Nano can connect to our custom PCB through a Ribbon cable**
- Do we have to design or build an AC to DC converter? **No, it is not required to make our own AC-DC conversion. Utilize high-efficiency bricks, like the Apple ones.**

- As far as PCB design, virtually all components are required to be surface mount devices. Breakout boards and headers are not accepted. The general process is to buy breakout components for testing, and then when everything works on a bread-board, do a “schematic scan” and move all boards onto the same PCB circuit. Peripheral devices such as motors should connect to the PCB through a socket/clip. Motor control should be done with an H-bridge circuit. Electronic Speed control (Brushless motors) you can buy instead of design due to complexity.