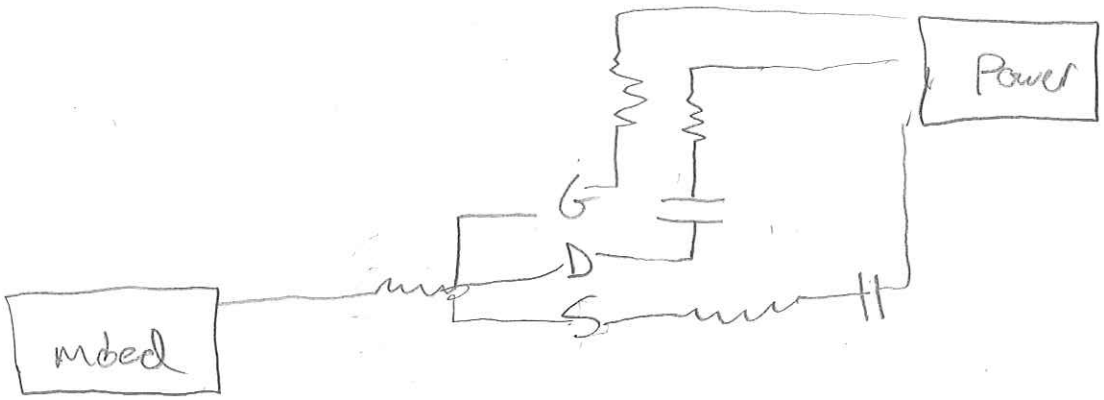
(1)

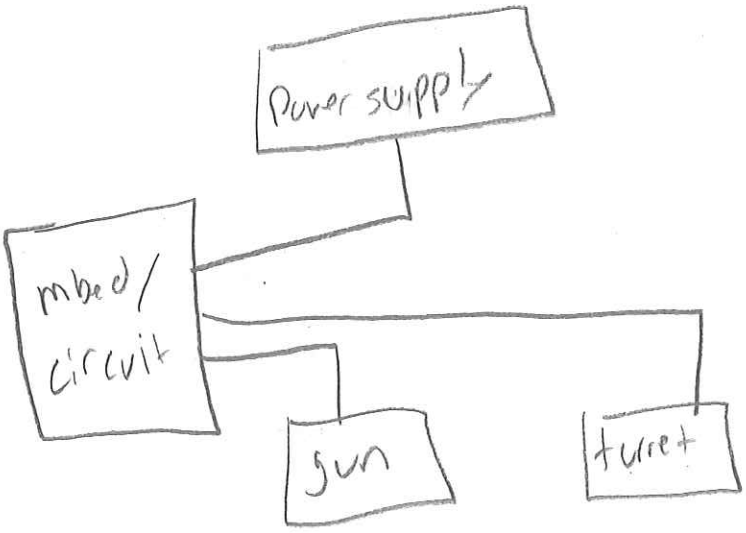

Initialize Webcam
Camera
Get image
plot crosshair
figure image
fill holes/bw
binary image
Region Properties
Target Stats
Find cent location
Centroid on Target

(2)


Power
G
D
S
mbed

Sweney

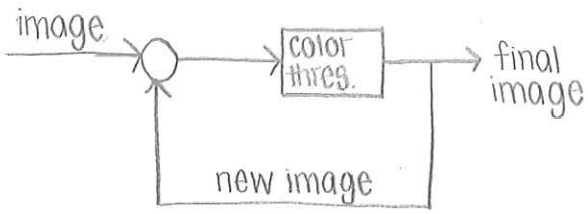
Dino Zacharias



when spinner = 1 & plunger = 1 the turret will spin at max power and the plunger will operate at max power. Each component should receive whatever the power supply is supplying: likely 9V. The mbed determines where to send the power, how much, and how often

Miranda Deng

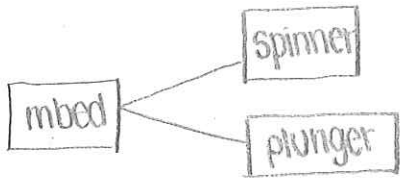
1.



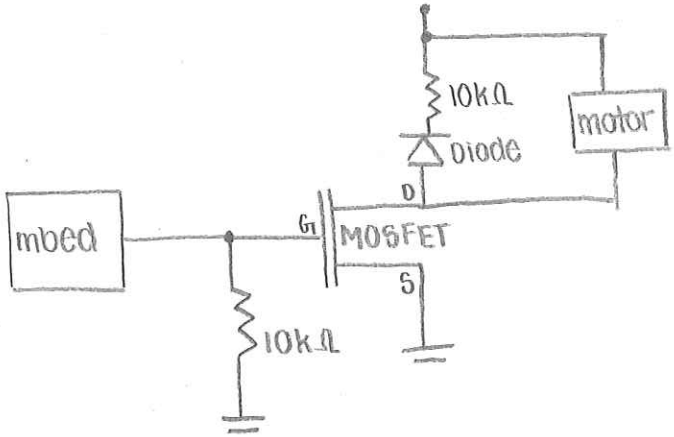
The computer takes in the snapshot from the camera and then puts in into the color thresholder where we determine what threshold we want to look at. The data is sent back and now the camera thresholds the image to only look at certain colors.

I would talk about finding centroid/crosshair

2. The spinner starts the gun motion and allows it to shoot while the plunger loads the gun. The mbed triggers these two to start moving when certain commands are given.

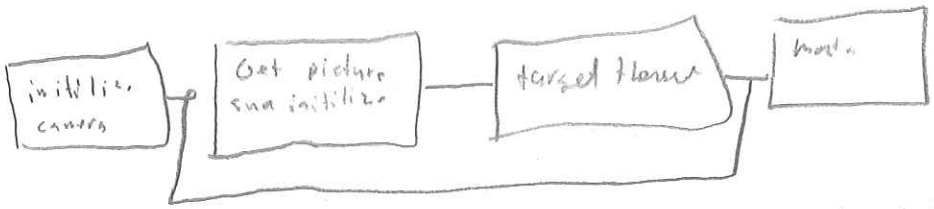


I would do the power supply



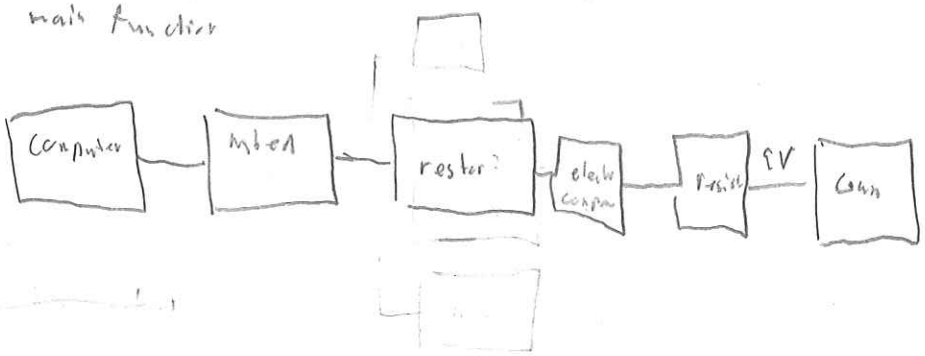
Hendricks

(1)



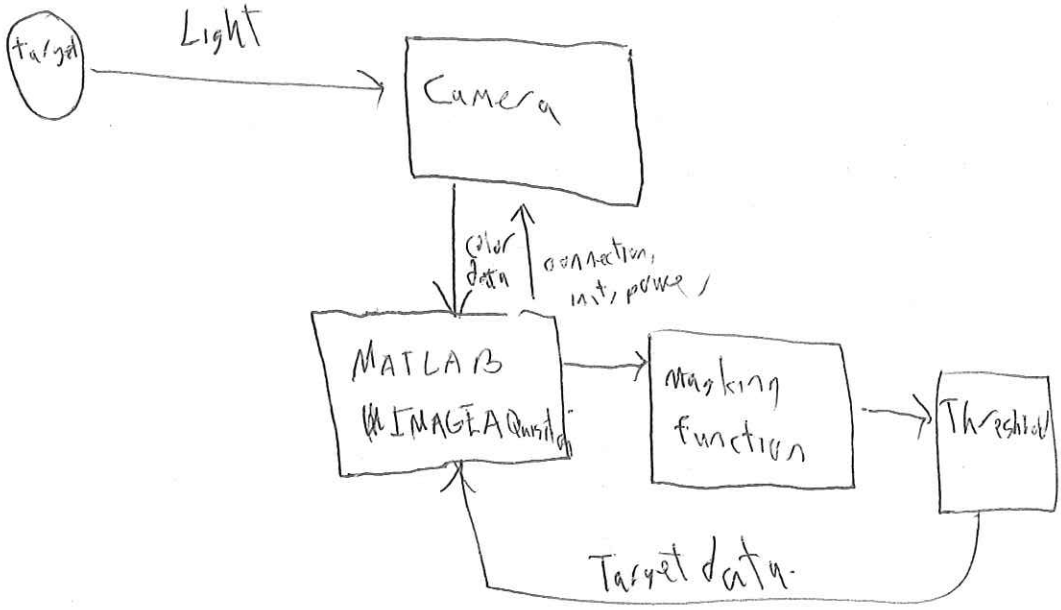
Our computer vision code first initializes our camera. Then takes an image from the feed and sends it to our target threshold function. In the threshold function we are looking for the target by having the computer look for a certain color and over a range that would fit our target. Once it has this it will find it's centroid and return the data to the main function

(2)



From the mbed we can allow current to flow to one or all three of the motors depending on if we have our circuit set up properly. By sending a single from our computer through the mbed through a series of resistors and other pieces and boards to the motors where they then rotate in a direction depending on the direction of the current

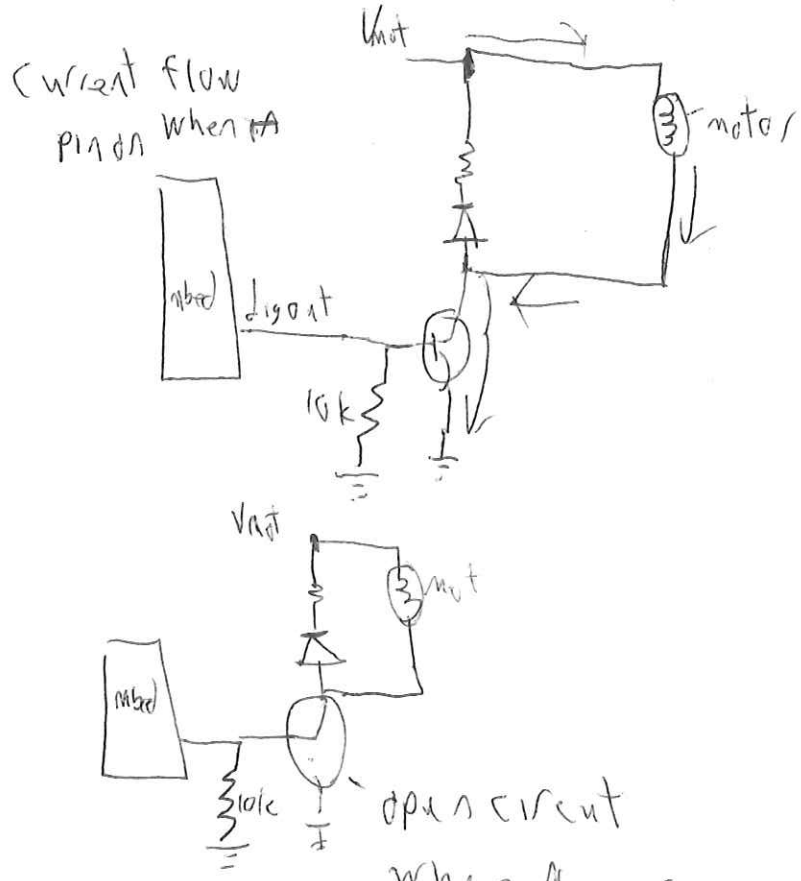
Paul malgieri



The camera takes in light from its surroundings. A computer, using matlab connects to this camera, powering it and getting color data. This data is passed through a masking function, becoming 0's where color data does not match the target color, and 1's where it does. The function then fills small holes, identifies continous orange areas, and checks to see if the continous areas are the proper size's/shape ~~for~~ to be a valid target. If they are, using the height and width (true and in pixels), range can be approximated. All this data is passed back and gets a centroid plotted on the target

2. spinner = 1 - pin goes to high, drives transistor into on state, connecting drain and source, completing the circut over the spinner motor, causing it to spin.

Exact same process with plunger.



open circuit
when pin off - no current.

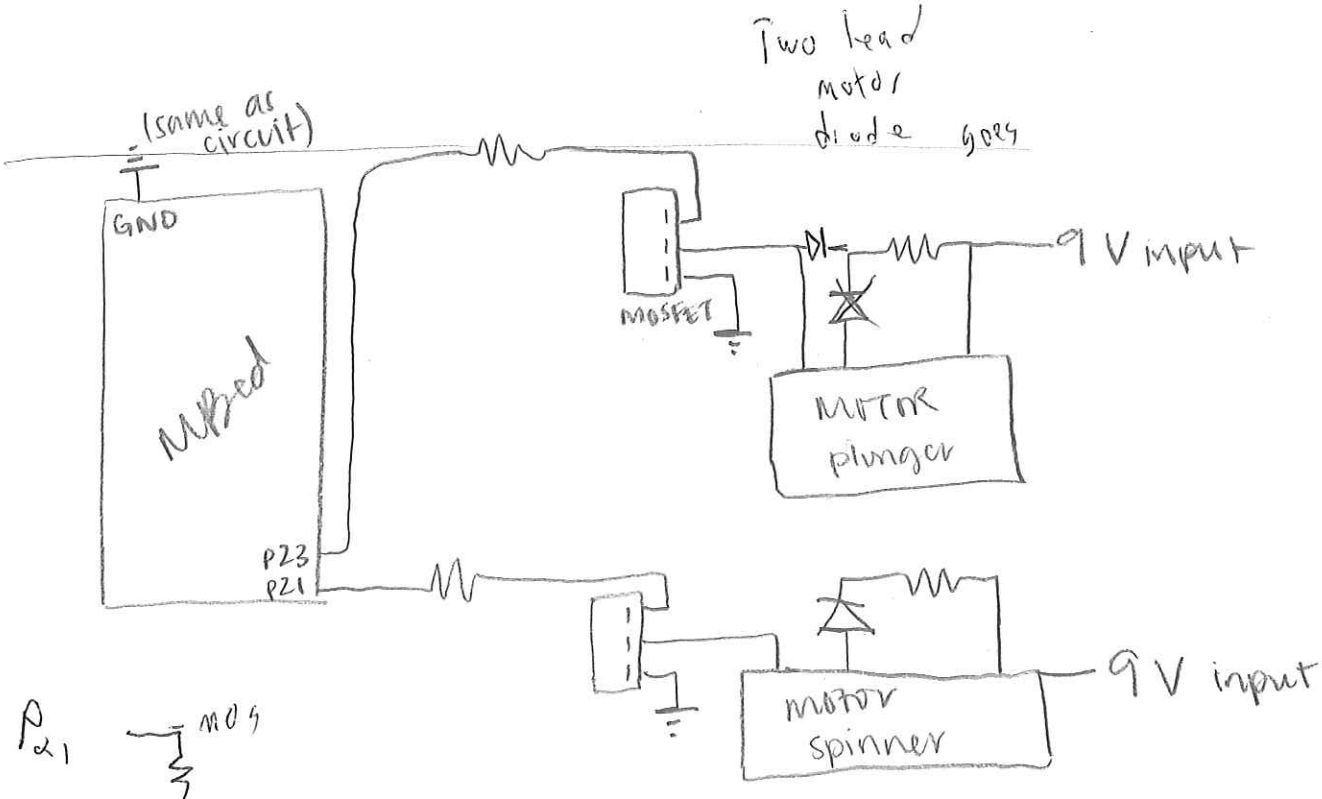
Maria Satre

~~World~~

1. - The camera is attached serially to the computer.
   - Registered in matlab as a webcam which automatically creates a video feed in a figure
   - A new image is then taken and added to a new figure with a centroid.
   - A min and max area & eccentricity are evaluated for potential targets based on the binary image the camera sees and the Maskorange values we got using the color processing portion.
   - The binary image is (created from color image data, creating binary mask) broken down into each part that contains the desired color and the area, centroid and eccentricity are saved

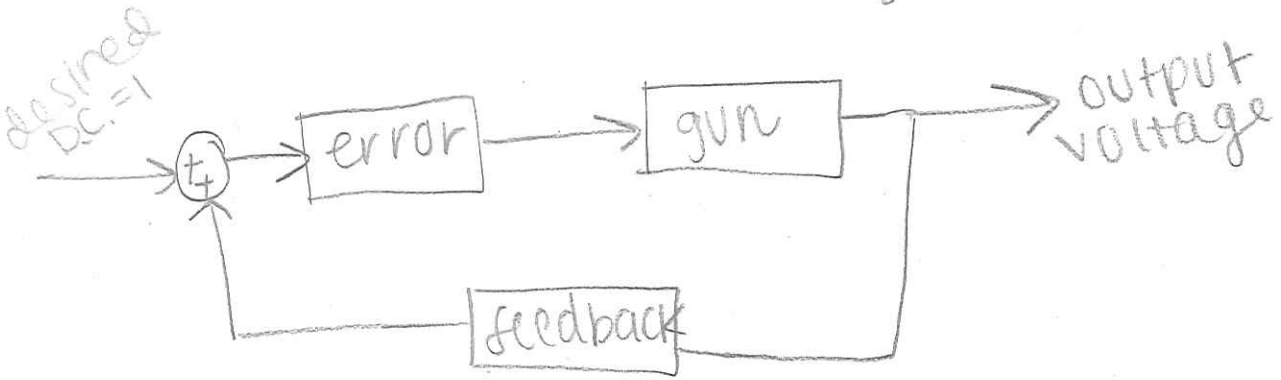
   if the area & eccentricity fall in the specified range from before a centroid will be added to the center of the object based on its location in stats Targets which holds all of the white binary blips and targets.
   - If no target is found it continues to run without the centroid putting new images continuously on the figure.

2.



1. Computer vision:
After making the camera turn on and display which we initialized by connecting it through matlab, we used the threshold app to binary the image into seeing just the orange circle target, while making everything else black. To filter out non-target orange images, we had a for loop which stated that any target less than the approx. size of the orange circle should be eliminated from the display.

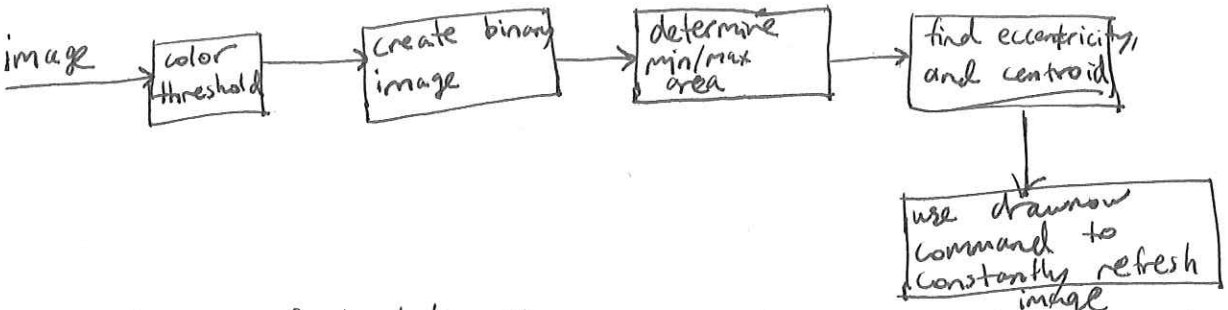
2. This means full voltage will be used to power the spinner and plunger as each D.C. will be 1.



Undset Donaldson

Peter Lohrbach

1)



In words: we first take the image and apply color thresholding to it. Then, we create another figure which is our binary image window. We then created a target crosshair. We set a min/max area and min/max eccentricity and applied all of these limits to the image to just display the orange circle, which is the target. We also did scaling and did pixels to inches.

good!

consider talking about code - did you use a while loop to continue taking images?

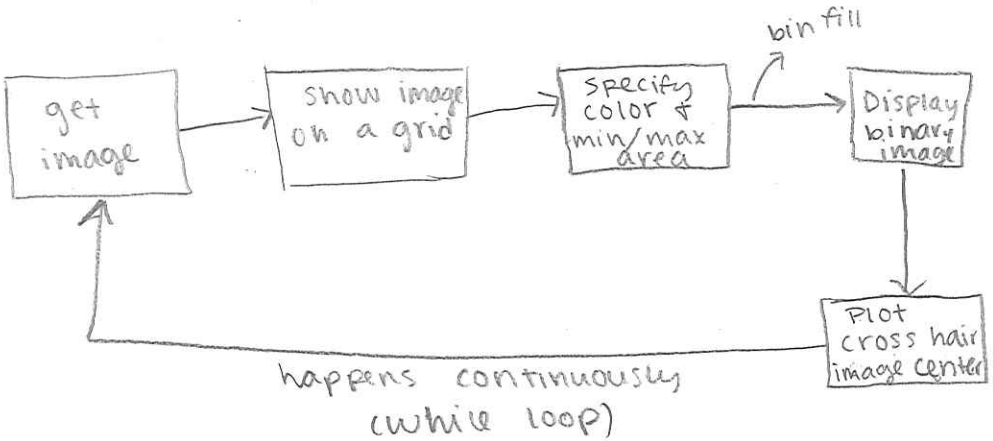
2) The gun has 2 wires coming from it; one for the spinner, one for plunger. When we set both of them to 1, they both will spin according to the voltage we set using the power supply. The mosfets help with this process. We have 2 mosfets in the circuit for firing and feeding. Each signal gets connected to mosfet and gets sent to the gun when fire/plunger is set to 1.

- Talk about mbed - what does it do? (digital out, voltage capability of mbed)

Sofia Figueroa

computer vision

1)

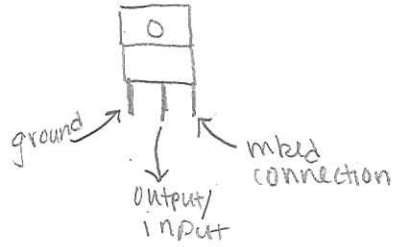


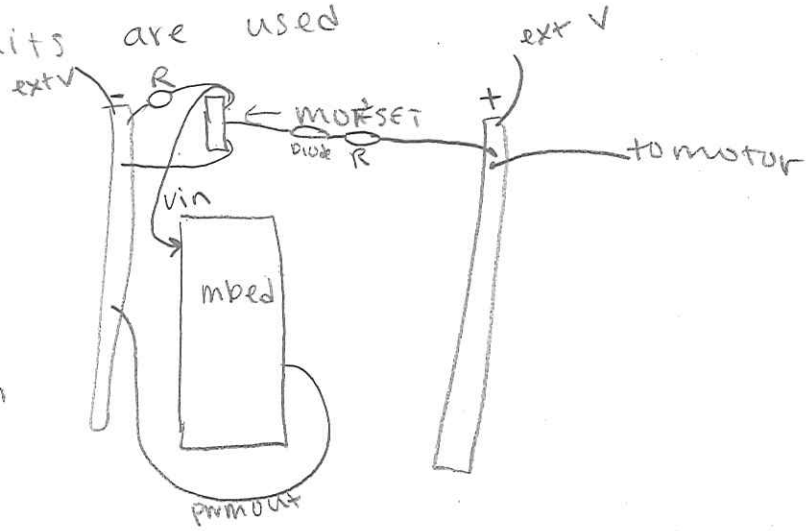
- use an initial shot to specify conditions (color, size, max/min area)
- create a while-loop that takes images of designated object & plots cross hair (target track)

2). • mbed uses digital out to send 9 V from external power supply to either power on the motors or power them off

• MOFSET circuits are used

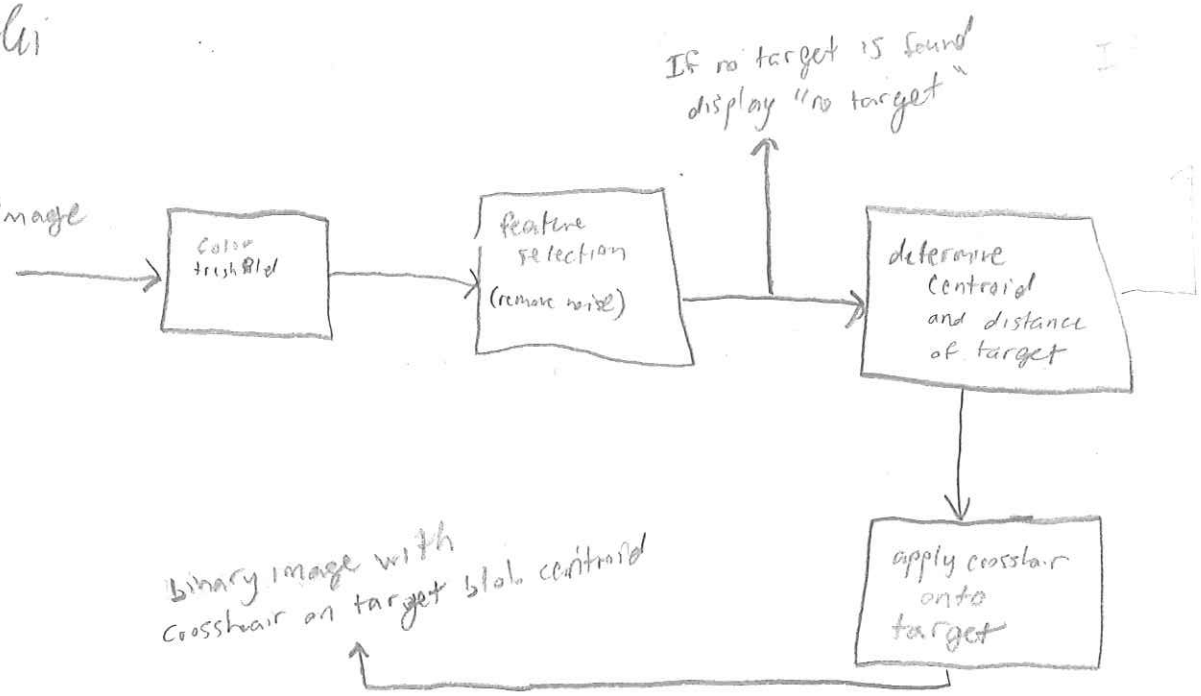
ex)





Sh

(1)

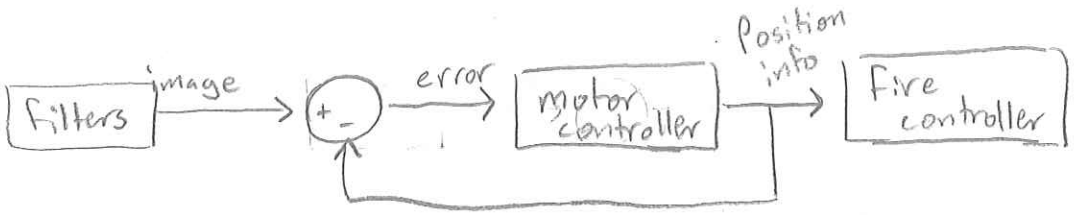


— this seems good to me

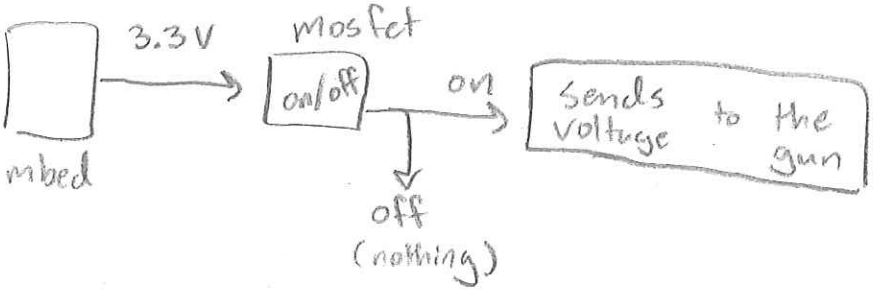
(2) Once the mbed tells the circuit to move, a digital out signal is sent out. This signal, connected to the gate of the mosfet will then be sent out to the motor, where it will be turned on.

— this part is right I'm pretty sure but keep going.

JAY JORDAN



The computer vision code takes an image & uses the pixels to determine distance, shape & color. With that information, we can create a program that turns the gun & fires automatically.



Jae Kim
EW309
5FEB20

Quiz:

① · Get image from webcam
· Apply color thresholding to isolate the target we desire
· Scaling to accomodate distance away from target
· Place centroid of target on center of where gun is aiming
· Fire gun using mbed code

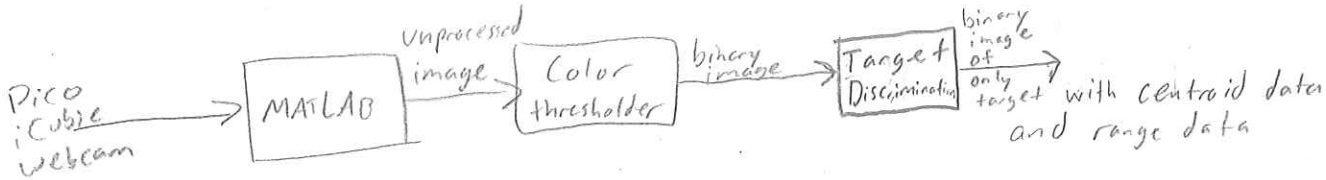
Computer → USB → mbed → resistors, diodes, MOSFETs → gun (Power supply ↓)

② Computer → USB → mbed → pwmOut → resistors, diodes, MOSFETs → gun (Power supply ↓)

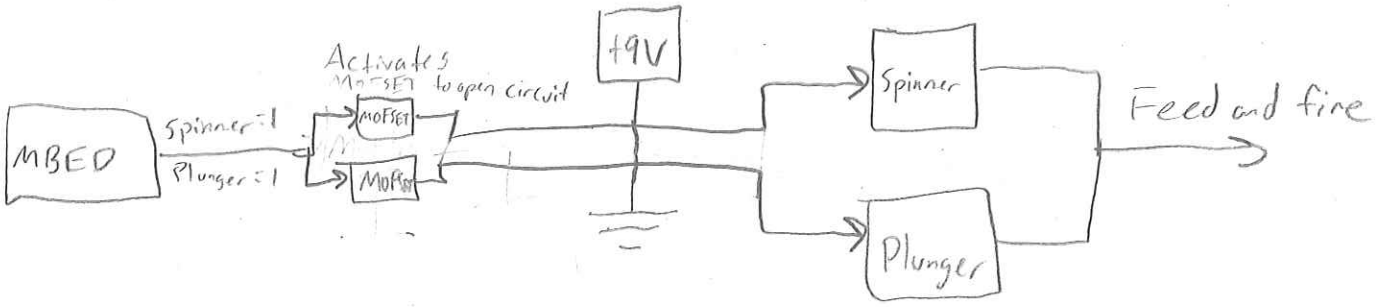
The mbed is connected in a circuit which enables us to control the motion of the gun. The pwmOut pin is what we use on the mbed to control the motion of the gun (p21)

Joseph Brock

1)



2)



James Love

1)

2)