CS/EE 120B Custom Laboratory Project Report

Autonomous Fire Hose project

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The Fire Hose Project or FHP aims to increase the safety of households. Using a flame sensor, the FHP detects the location of the source of the fire and controls a 12V pump. The goal is to put the system in front of important areas, that a fire should not occur. The status would be displayed on an LCD that could be placed elsewhere, in case it may not be in a safe area.

Initial Plans that was Scrapped

Having the pump move around provided too much trouble to realistically do. having the servo go 360 causes tangles in wires, and crimps in the tubing. The moving of the servo would be limited by the length of the tubing and the tanglement of tubes.

BUGS

LOTS OF BUGS

- Servo logic SM doesn't work as it should, despite it should be working.
- Servo is also too weak to move the tube.
- transmitter and reciever not working(maybe fried) logic is there

HardWare

- Computing
  - 2 x Elegoo Arduino Uno R3
- Sensors
  - IR Sensor
  - Radio Frequency transmitter
  - Radio Frequency Reciever
- OUTPUTS
  - LCD Screen
  - Pump
  - Relay
  - MicroServo
- MISCELLANEOUS
  - Wires
  - Jumper Wires
  - tubing
  - 12V adapter
  - tub

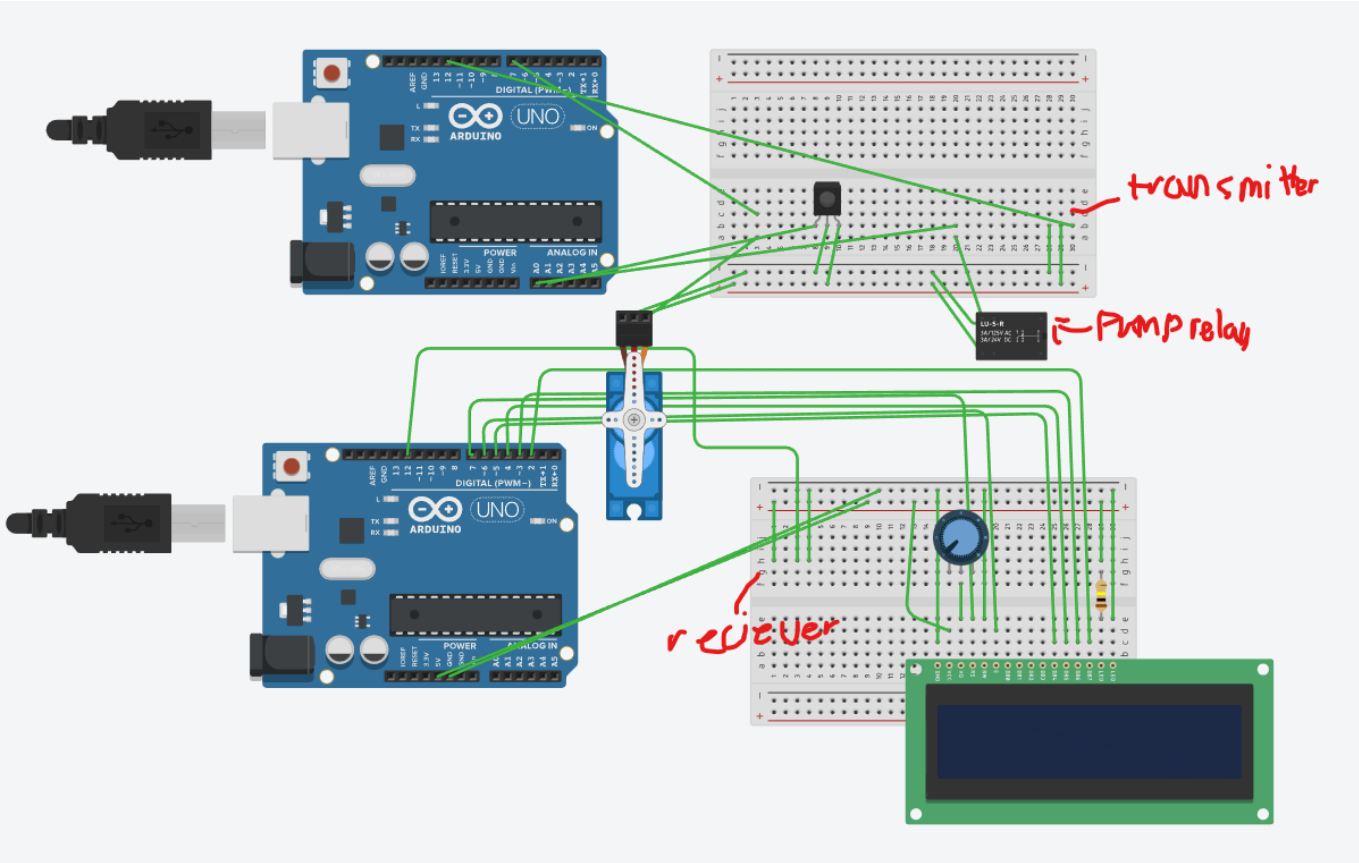
Complexities

- Servo
- Relay + Pump
- RF transmitter and reciever

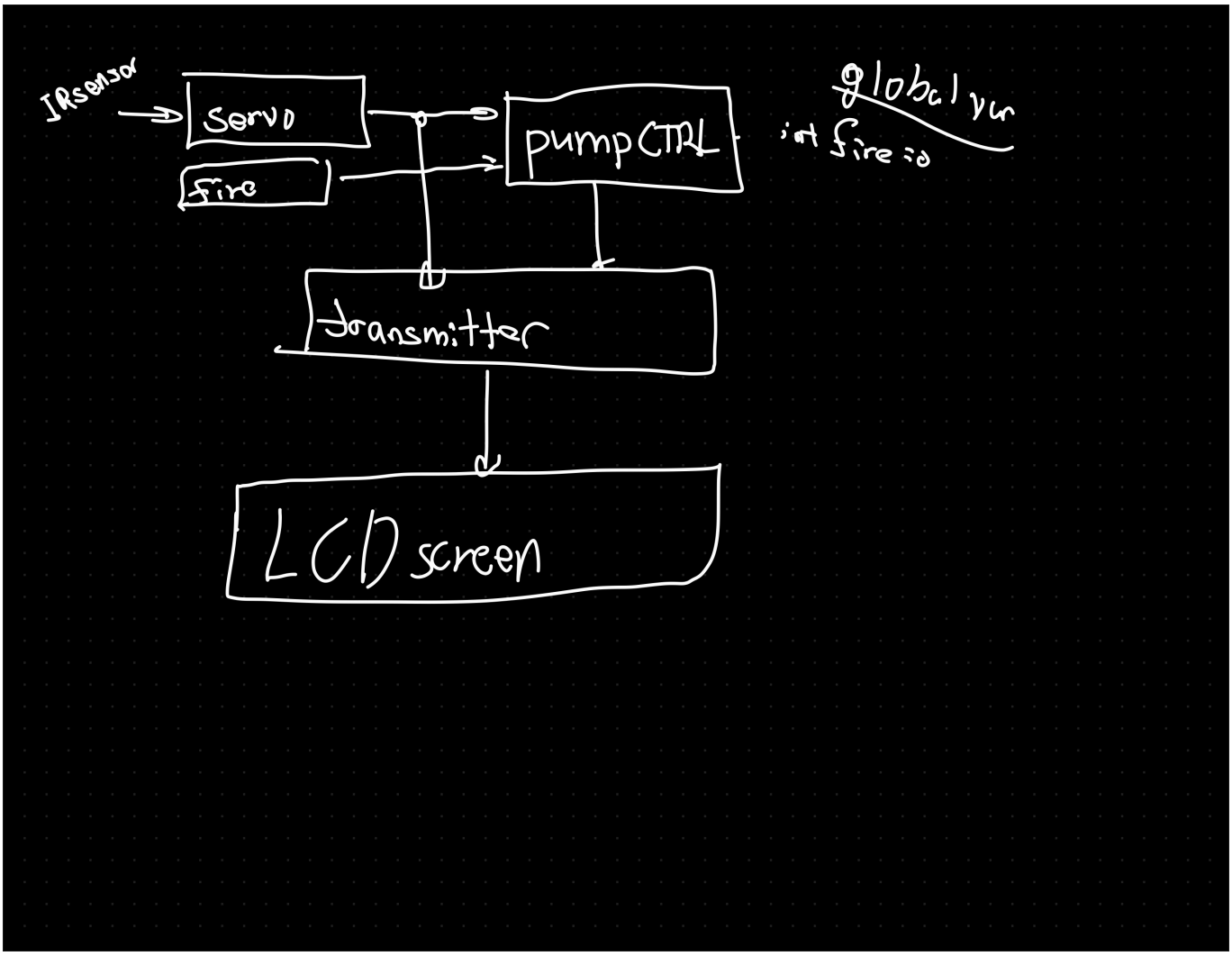
Libraries

- RadioHead
- SPI Library (for compiling)

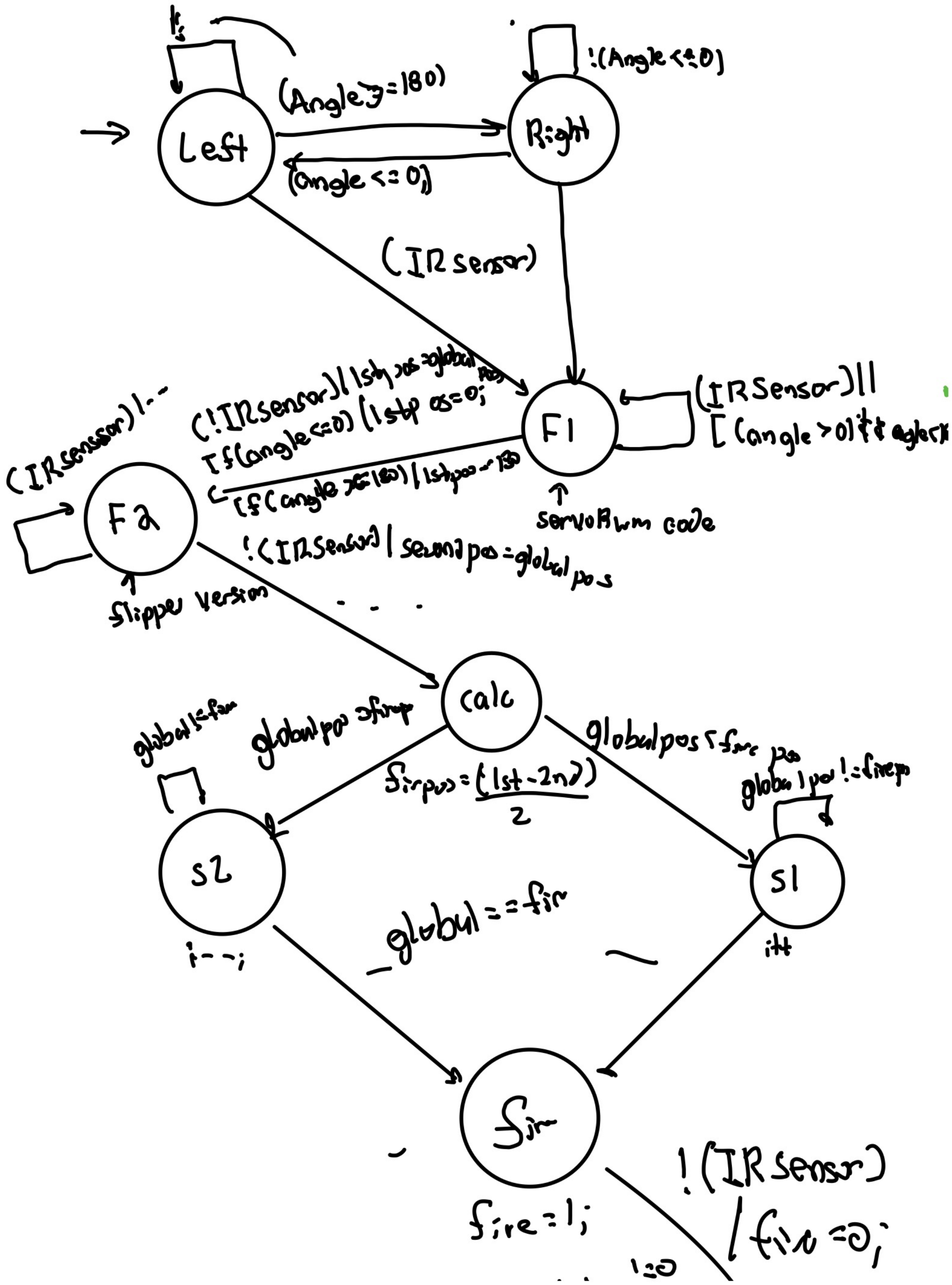
Wiring Diagram

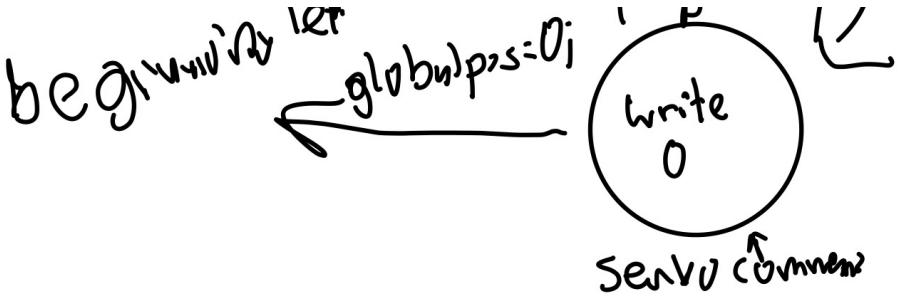


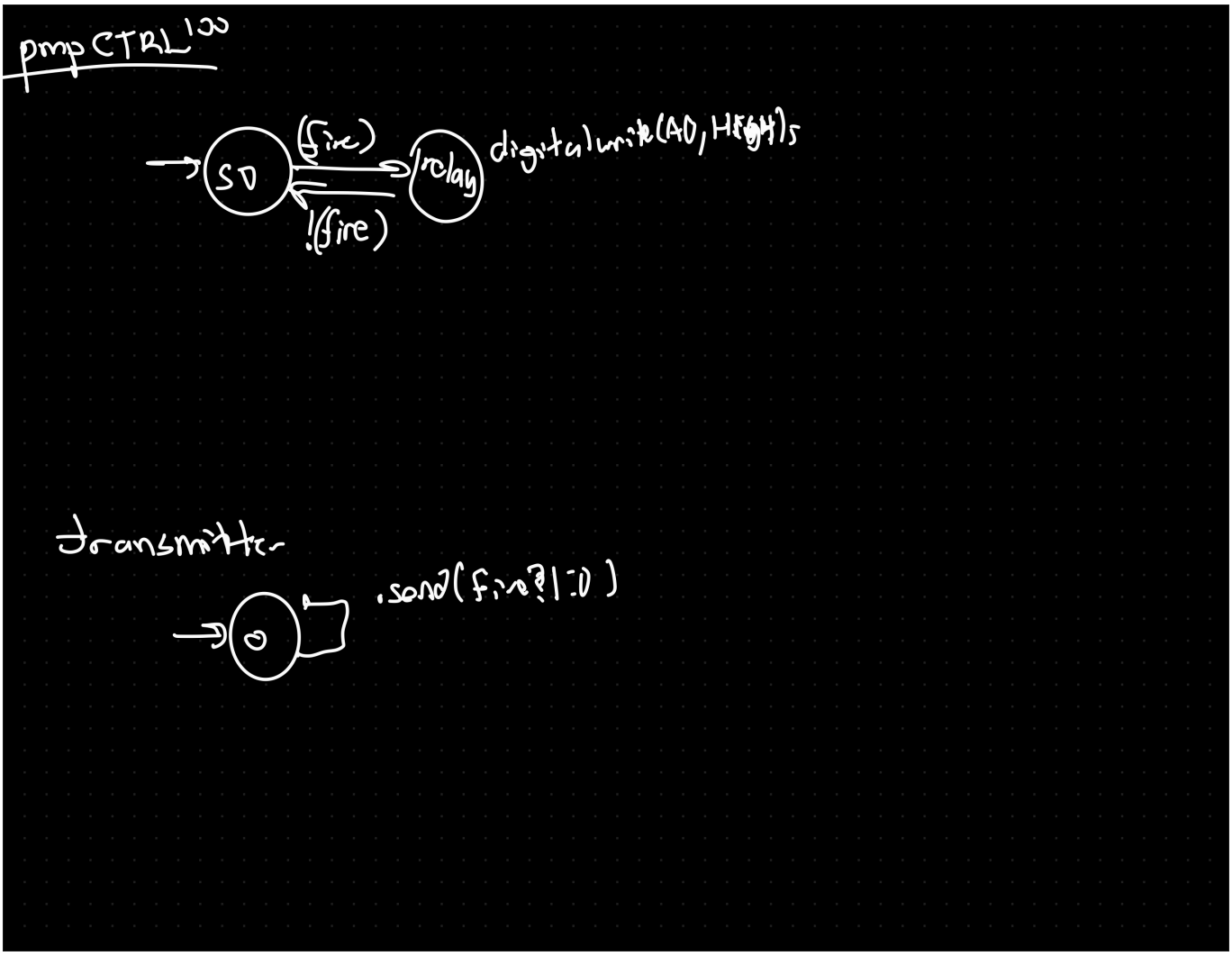
Task Diagram

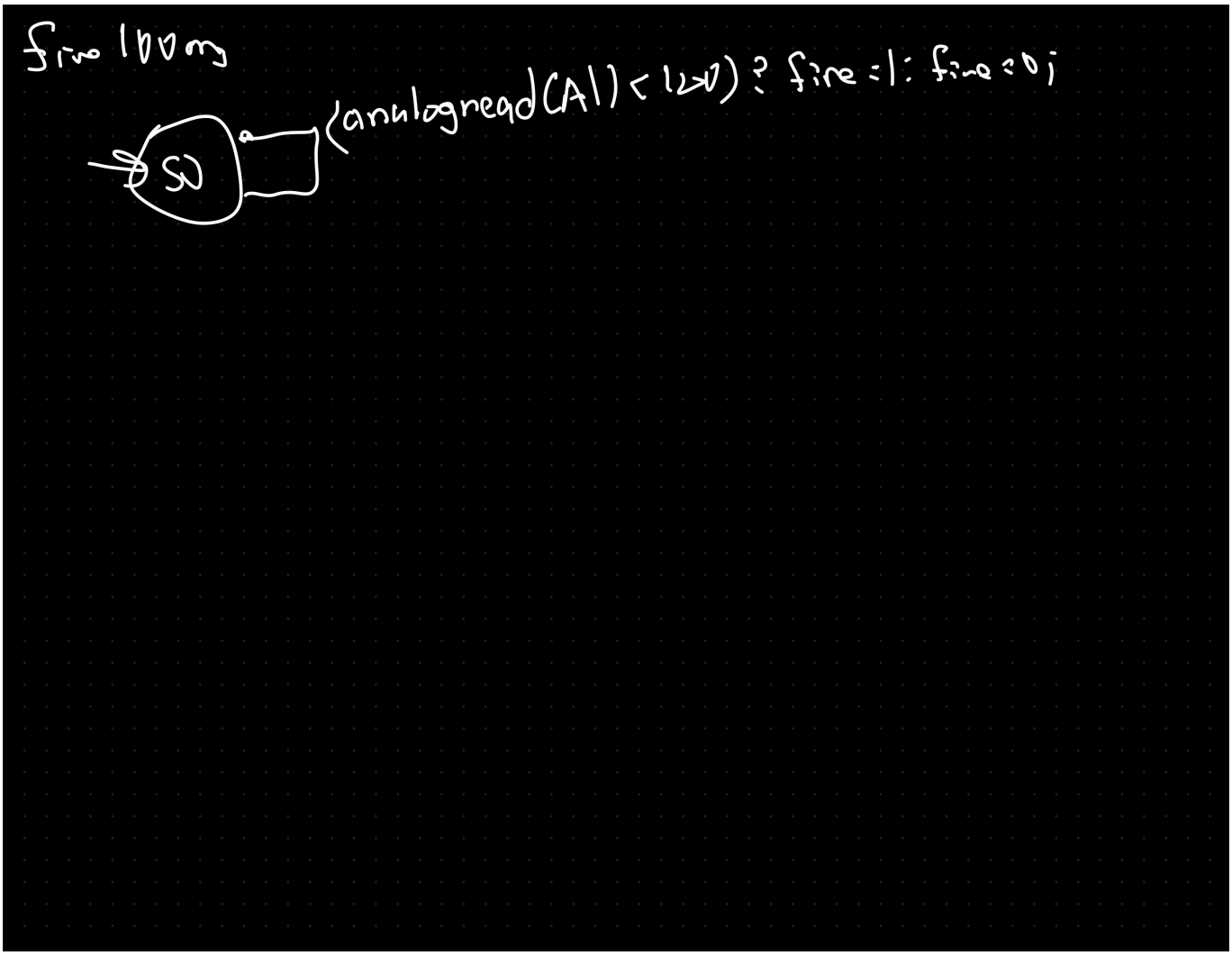

IRsensor
Servo
fire
pumpCTRL
global var
int fire = 0
transmitter
LCD screen

SM Diagrams


Left
Right
(Angle>=180)
(angle<=0)
(IR sensor)
F1
F2
servoPwm code
flipper version
calc
s2
s1
i--;
i++
fire=1;
!(IR sensor)
| fire=0;


write
0


pmpCTRL100
SD
(fire)
!(fire)
relay
digitalWrite(A0, HIGH);
Transmitter
.send(fire?1:0)


fire 100ms
(analogread(A1) < 120) ? fire = 1 : fire = 0;