#<https://learn.sparkfun.com/tutorials/raspberry-pi-spi-and-i2c-tutorial/all>

# Source: <https://www.takaitra.com/spi-device-raspberry-pi/>

import spidev

import cv2

import numpy as np

# Setup SPI

spi = spidev.SpiDev()

spi.open(0, 0)

spi.max\_speed\_hz = 115200

cam = cv2.VideoCapture(0)

while True:

# Get the status of capture and the current frame

ret, frame = cam.read()

if ret:

# The frame is the image we manipulate

edges = cv2.Canny(frame, 400,450)

lines = cv2.HoughLinesP(edges, 1, np.pi/180, 10, None, 0, 150)

avg\_slope = 0

if lines is not None:

for line in lines:

for x1, y1, x2, y2 in line:

cv2.line(frame, (x1, y1), (x2, y2), (0, 0, 255), 5)

if x2 - x1 == 0:

x2 += 0.01

avg\_slope += (y2-y1)/(x2-x1)

avg\_slope /= len(lines)

# Steering is calculated based on the average slope of the lines

if abs(avg\_slope) > 6:

# Forward

spi.xfer([0x66])

elif avg\_slope < 0:

# Left

spi.xfer([0x6C])

else:

# Right

spi.xfer([0x72])

cv2.imshow(“Robot”, frame)

# Press Q to break the program

if cv2.waitKey(1) & 0xFF == ord(‘q’):

break

# Stop the footage and close all windows

cam.release()

cv2.destroyAllWindows