Here is a Python code that uses the ultrasonic sensor to detect obstacles and the servo motor to avoid them

import machine

import time

# Initialize the ultrasonic sensor pins

echo\_pin = machine.Pin(16, machine.Pin.IN)

trig\_pin = machine.Pin(17, machine.Pin.OUT)

# Initialize the servo motor pin

servo\_pin = machine.Pin(1)

# Initialize the L298N motor driver pins

ena = machine.PWM(machine.Pin(0))

in1 = machine.Pin(2, machine.Pin.OUT)

in2 = machine.Pin(3, machine.Pin.OUT)

enb = machine.PWM(machine.Pin(4))

in3 = machine.Pin(5, machine.Pin.OUT)

in4 = machine.Pin(6, machine.Pin.OUT)

# Set the servo motor angle

angle = 90

# Set the motor speed

speed = 50

# Set the ultrasonic sensor timeout

timeout = 10000

# Function to measure distance using the ultrasonic sensor

def measure\_distance():

trig\_pin.low()

time.sleep\_us(2)

trig\_pin.high()

time.sleep\_us(10)

trig\_pin.low()

while echo\_pin.value() == 0:

start = time.ticks\_us()

while echo\_pin.value() == 1:

end = time.ticks\_us()

duration = end - start

distance = duration \* 0.034 / 2

return distance

# Function to move the servo motor to the specified angle

def move\_servo(angle):

servo\_pin.value(0)

ena.duty\_u16(0)

enb.duty\_u16(0)

duty\_cycle = int((angle / 180) \* 1000)

ena.duty\_u16(duty\_cycle)

time.sleep(0.5)

# Function to move the robot forward

def move\_forward():

in1.value(0)

in2.value(1)

in3.value(0)

in4.value(1)

ena.duty\_u16(speed)

enb.duty\_u16(speed)

# Function to move the robot backward

def move\_backward():

in1.value(1)

in2.value(0)

in3.value(1)

in4.value(0)

ena.duty\_u16(speed)

enb.duty\_u16(speed)

# Function to stop the robot

def stop():

in1.value(0)

in2.value(0)

in3.value(0)

in4.value(0)

ena.duty\_u16(0)

enb.duty\_u16(0)

# Main loop