```
#include<LiquidCrystal.h>

LiquidCrystal lcd(13, 12, 11, 10, 9, 8); //(rs, en, d4, d5, d6, d7)

byte squa[8] = {
  0b01110,
  0b10001,
  0b00110,
  0b11000,
  0b11111,
  0b00000,
  0b00000,
  0b00000
};




float V = 0, U = 0, R = 0.50;
const int SPEEDOMETER = A0;
unsigned long To = 0, SM = 0;
float Tc = 0;
float S = 0;
float A = 0;
const int ACCELERATOR = A1;
const int SWITCH = A2;
float MAX_V = 261.0; //km/h
float MAX_C = 60.0;
float THRHD_C = 40.0;
int PWM = 0;
const int CURRENT = A3;
const int MOTOR = 3;
float MAX_A = 15113.830414986014785040906949407;
int MAX_PWM = 255, MIN_PWM = 0;




void setup() {
  lcd.begin(16, 4);

  // create a new character
  lcd.createChar(1, squa);

  lcd.clear();
```

```
 lcd.setCursor(2, 1);
 lcd.print("D_EAZYLIFE");
 lcd.setCursor(2, 2);
 lcd.print("07051548082");
 delay(1000);

 Serial.begin(38400);
 pinMode(SPEEDOMETER, INPUT);
 pinMode(ACCELERATOR, INPUT);
 pinMode(SWITCH, INPUT);
 pinMode(CURRENT, INPUT);
 pinMode(MOTOR, OUTPUT);
}
void loop() {
  SM = pulseIn(SPEEDOMETER, HIGH, 5000000);

  V = map_V(SM);
  if (millis() == To) {
    Tc = 0;
  }
  else{
    Tc = (millis() - To) / 3600000;
  }
  To = millis();
  if (Tc == 0){
    A = A;
  }
  else {
    A = (V - U) / Tc;
  }
  S += (V + U) * Tc / 2;
  U = V;

  if (digitalRead(SWITCH) == HIGH) {
    if (A > map_A(analogRead(ACCELERATOR)) || map_A(analogRead(ACCELERATOR)) <= 0 ||
V > MAX_V || map_C(analogRead(CURRENT)) >= MAX_C) {
      PWM = 0;
     analogWrite(MOTOR, PWM);
    }
   else if (map_C(analogRead(CURRENT)) < THRHD_C) {
     PWM = MAX_PWM;
     analogWrite(MOTOR, PWM);
    }
    else {
     PWM = map_PWM(map_C(analogRead(CURRENT)));
     analogWrite(MOTOR, PWM);
```

```
    }
  }
  else {
    PWM = 0;
   analogWrite(MOTOR, PWM);
  }

 lcd.clear();
 lcd.setCursor(0, 0);
 lcd.print("V = "), lcd.print(V), lcd.print(" Km/Hr");
 lcd.setCursor(0, 1);
 lcd.print("A = "), lcd.print(A), lcd.print(" Km/Hr"), lcd.write(1);
 lcd.setCursor(0, 2);
 lcd.print("C = "), lcd.print(map_C(analogRead(CURRENT))), lcd.print(" A");
 lcd.setCursor(0, 3);
 lcd.print("PWM = "), lcd.print(PWM);
 delay(50);

 Serial.println("");
 Serial.print("V = "), Serial.println(V);
 Serial.print("A = "), Serial.println(A);
 Serial.print("C = "), Serial.println(map_C(analogRead(CURRENT)));
 Serial.print("PWM = "), Serial.println(PWM);

 delay(50);
}

float map_V(unsigned long MV) {
  if (MV <= 0) {
    return 0; //km/hr //R=TIRE RADIUS IN METER
  }
  else {
    return (2.0 * 3.142 * (R / 1000.0)) / (MV / 3600000000.0); //km/hr //R=TIRE
RADIUS IN METER
  }
}

float map_A(float MA) {
  return map(MA, 0, 1024, 0, MAX_A); //km/hr^2   60mph=9.65606km/hr  2.3s=0.
000638889hA=15,113.830414986014785040906949407km/hr^2
}

float map_C(float MC) {
  return map(MC, 0, 1024, 0, MAX_C); //I
}
```

```
float map_PWM(float CURR) {
  return map(CURR, THRHD_C, MAX_C, MAX_PWM, MIN_PWM); //I
}
```