101年大學部國際交流甄選專題成果展

Auto-Extinguished Robot

Advisor：Hwang,Yean-Ren

**Student：Chia-yu Chen**
Y'an-bo Lin
Ying-jhen Jhou

1

1.Motivation

The fire is a dangerous subject, take a lot of peoples life each year. If we can create an auto-extinguished robot, it will help for the firefighter.

2. Chunghwa telecom remote control extinguished robot

This is the remote control extinguished robot of Chunghwa telecom, which uses mechanical arm to push the handle.
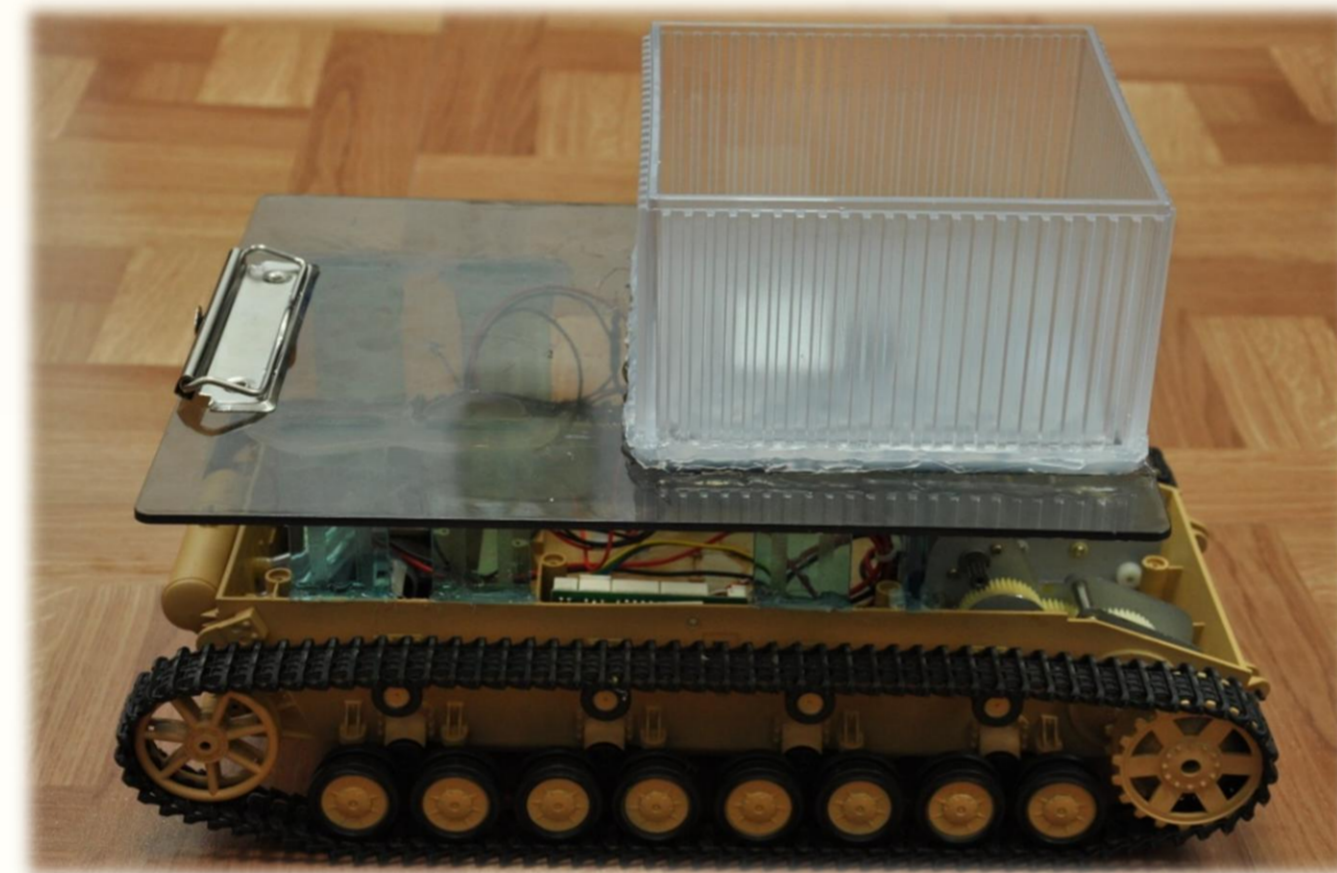
It is our reference of this 專題.

Web cam
Mechanical arm
Extinguisher
Vehicles
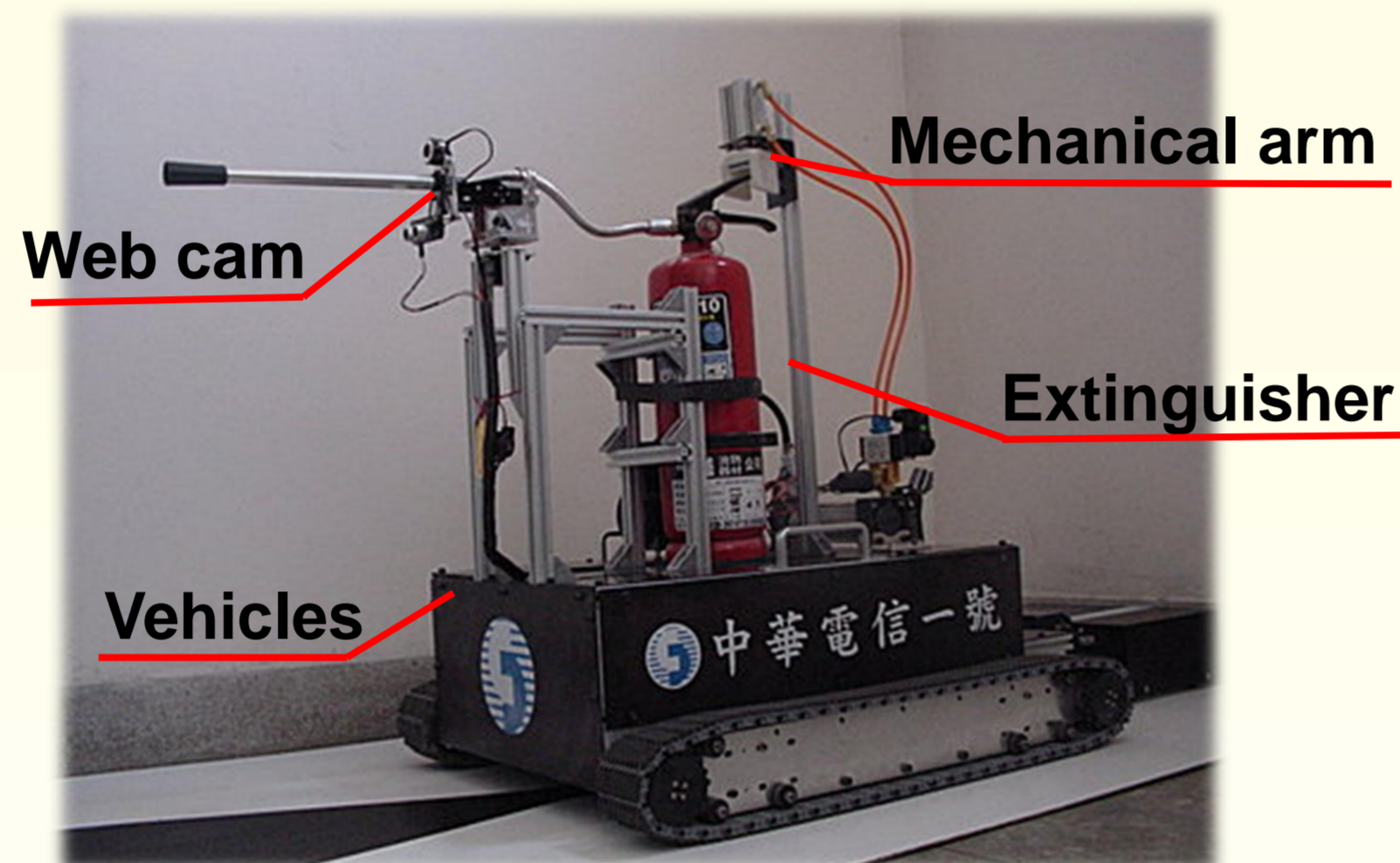
http://tw.myblog.yahoo.com/jw!_69FPriCFRn.oXv3Q Nf7CIUTPA--/article?mid=51286

3.The method of robot manufacture

3-1 Car's Structure

- To buy the commercial remote control car.
- We disassemble it except motors.
- Use Acrylic to do the support.

3-2 Circuit control

- Use micro control unit 8051 to control motors and extinguisher.
- The method of control the car is utilization circuit control the motors directly.
- One motor control one side.

9V
Motor B
9V
8051

Motor A
Extinguisher
Motor B
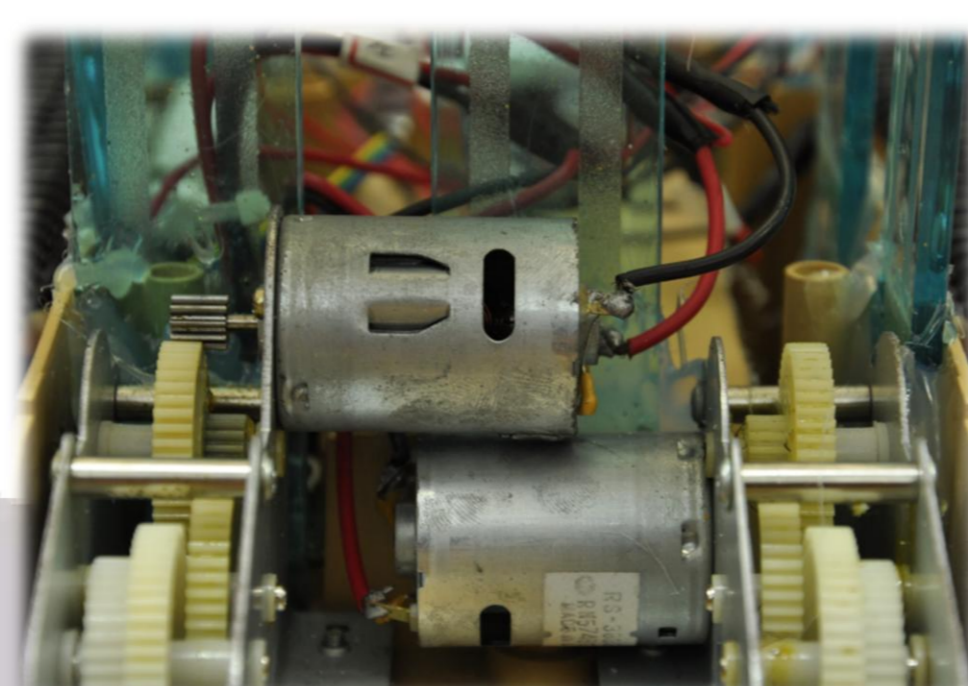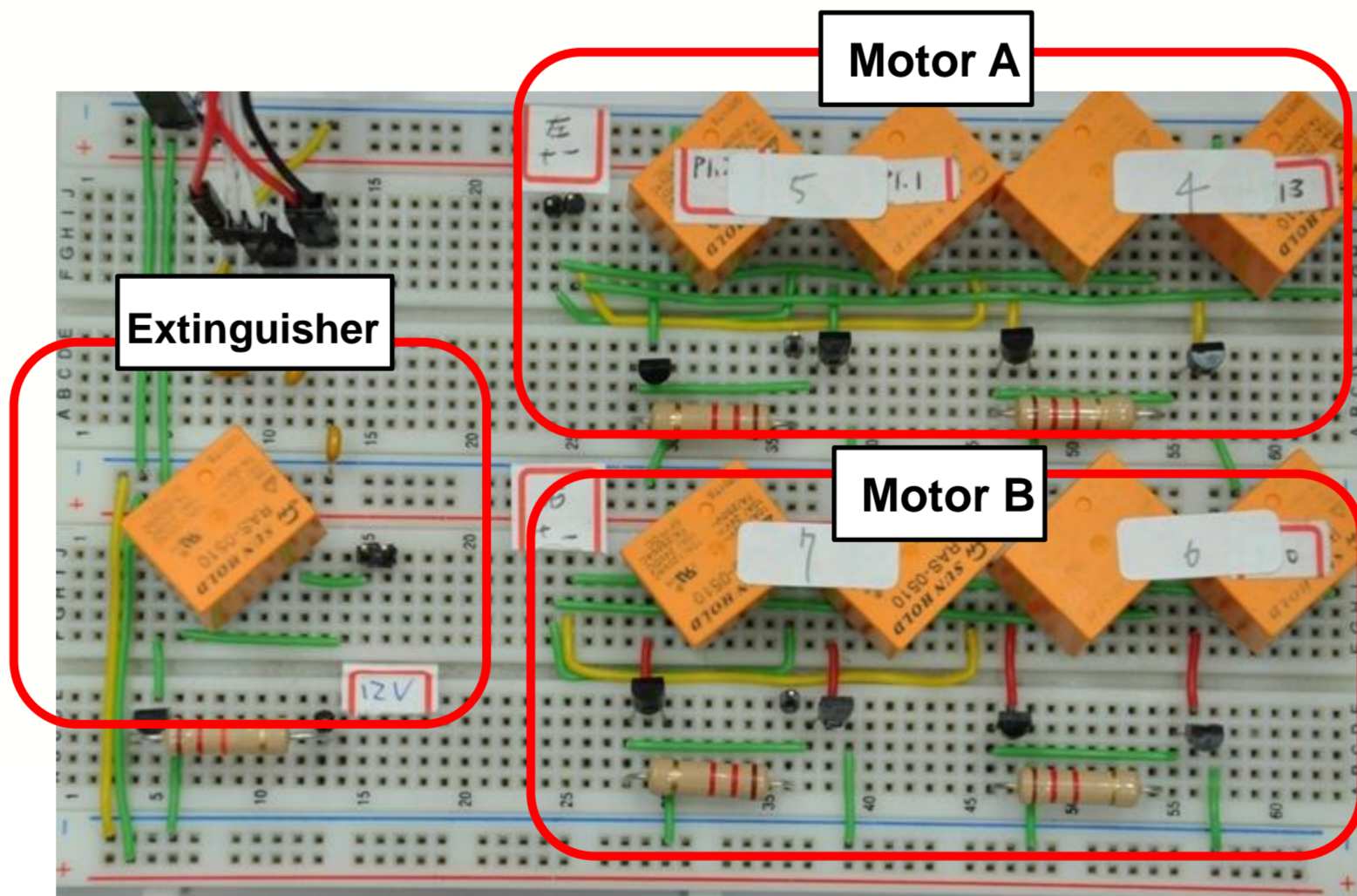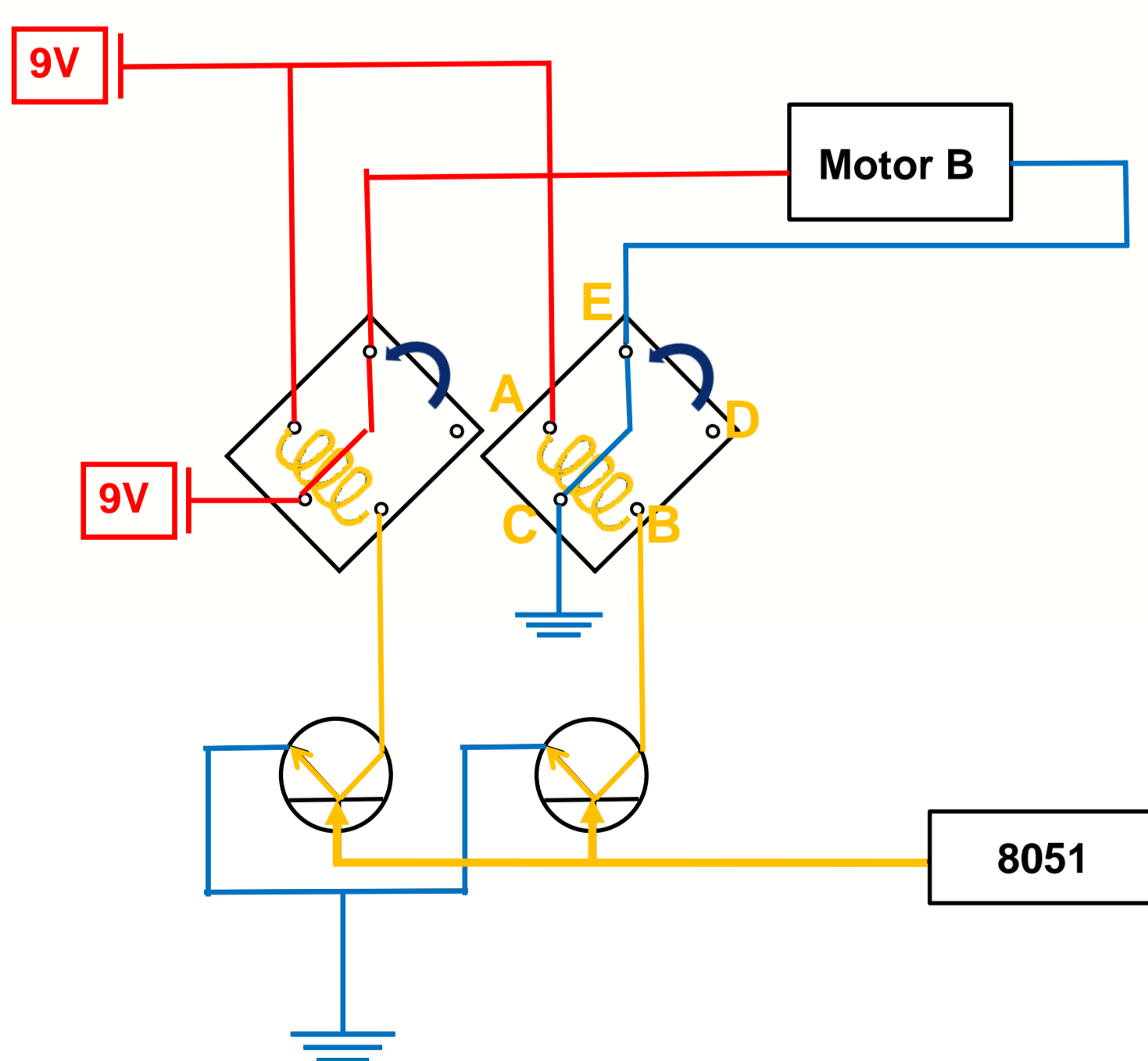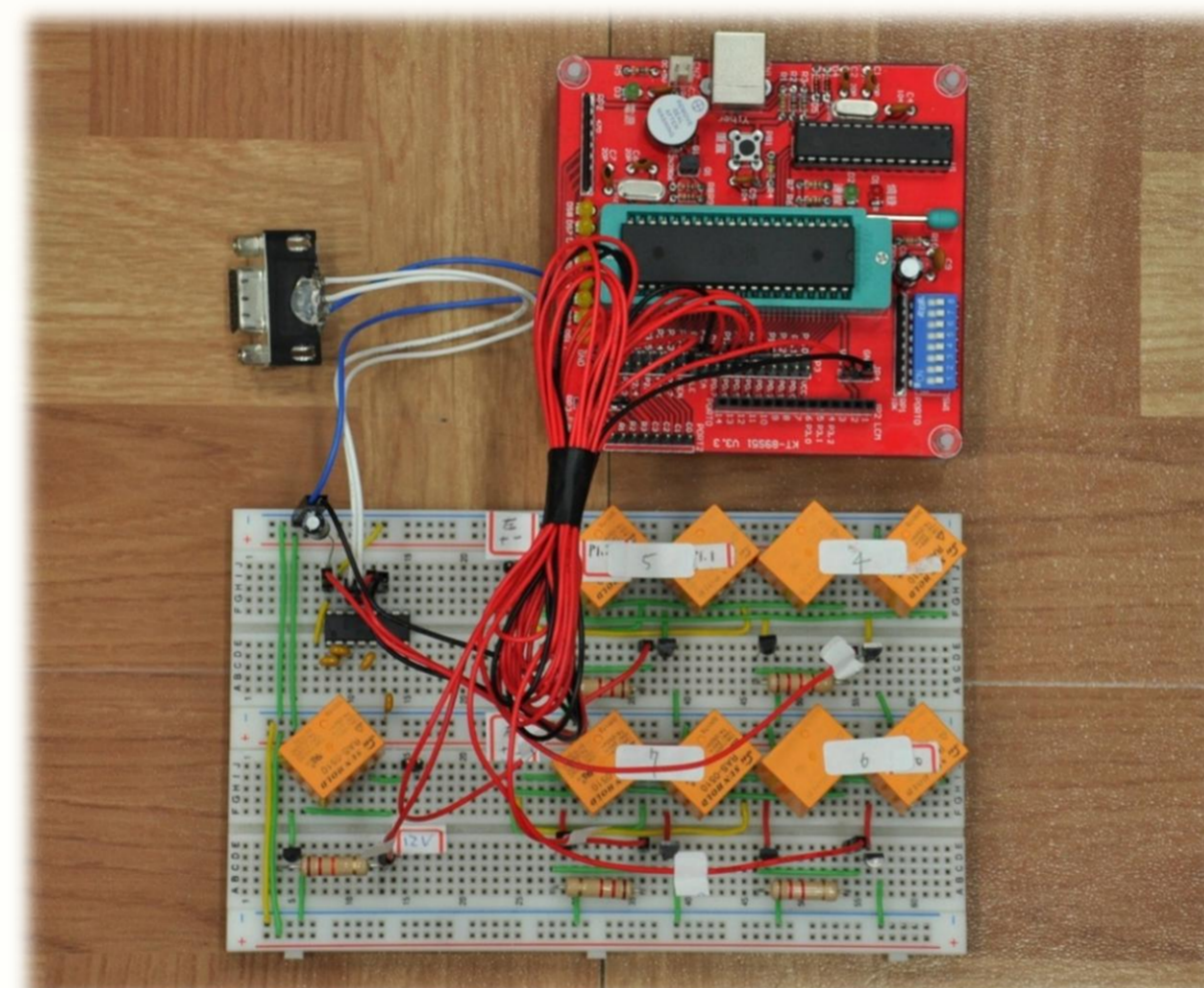
3-3 Image process

- **Assumption：**
  Simple black background .
  Fixed fire position (Candles).

- **The steps of main analysis:**
  Catch image → color analysis → binary → analysis candle's position→ analysis candle's distance → move →extinguish
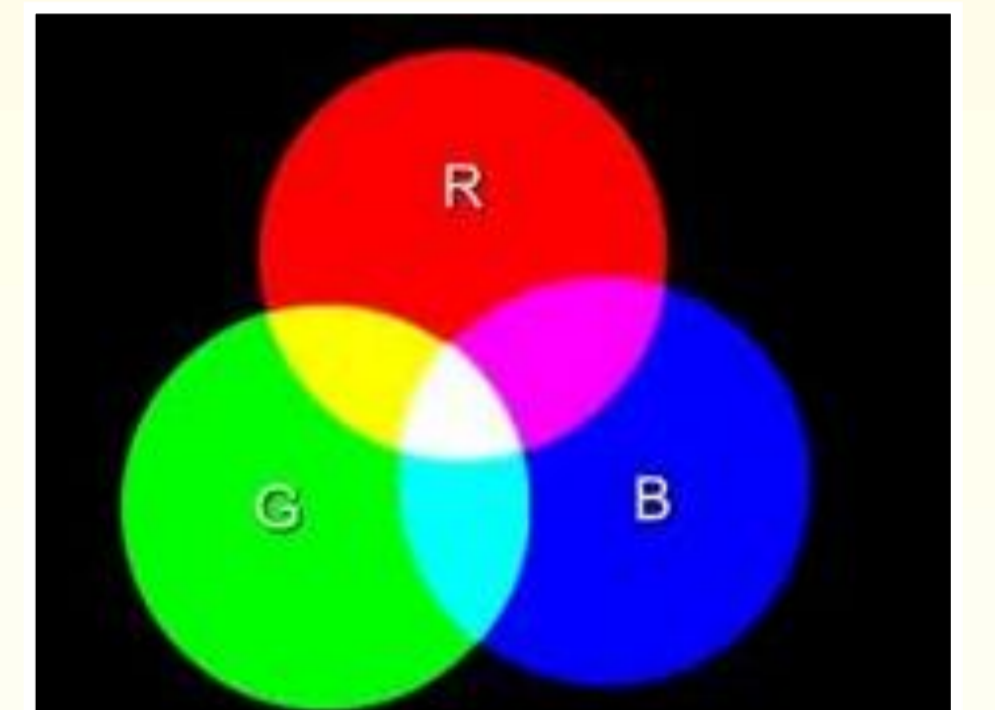
- **Analysis colors:**
  If (R,G,B) =(255,255,255) → White
  If (R,G,B) = (0,0,0) → Black

- **Binary:**
  Set appropriate threshold value to execute binary.

190
255
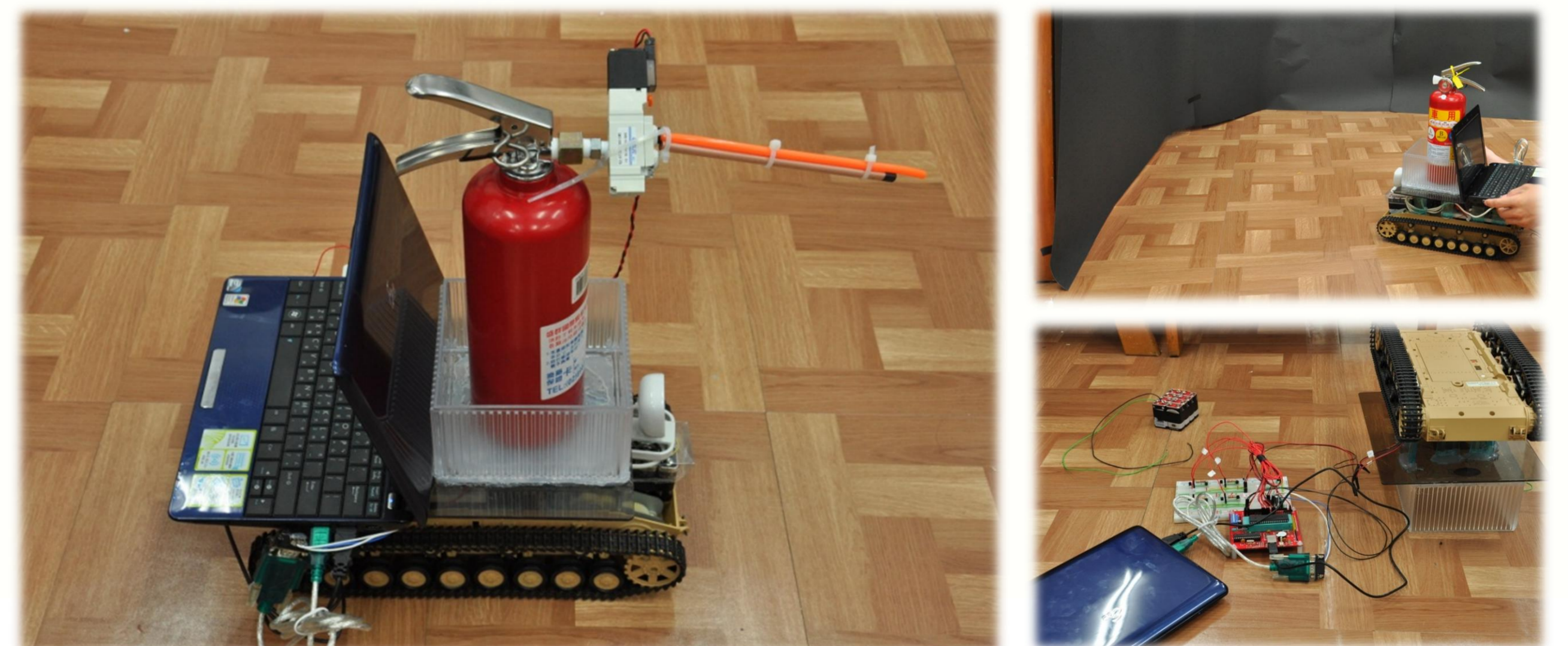0   255
0   255
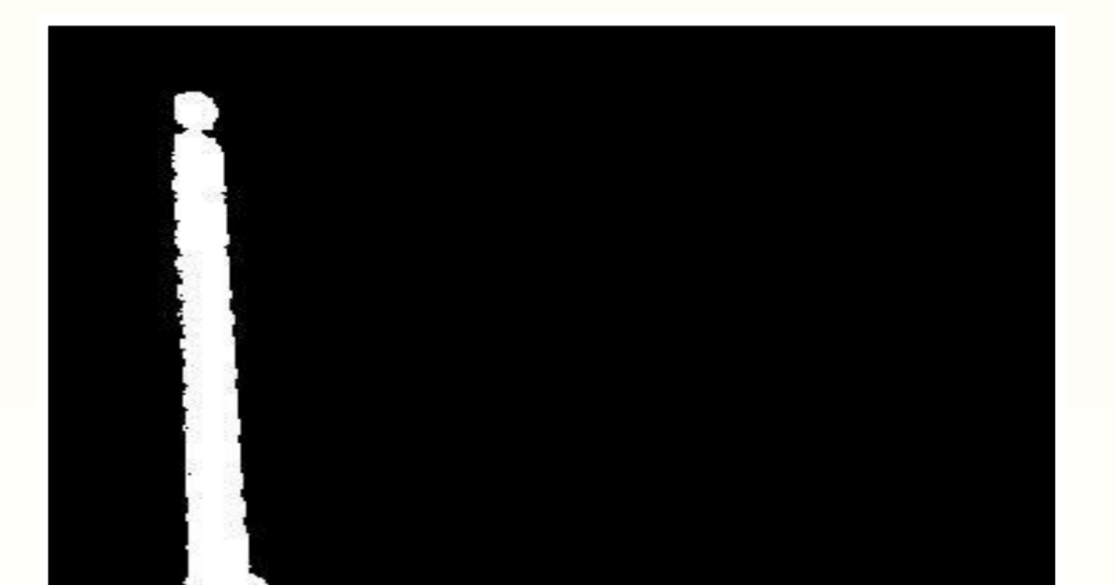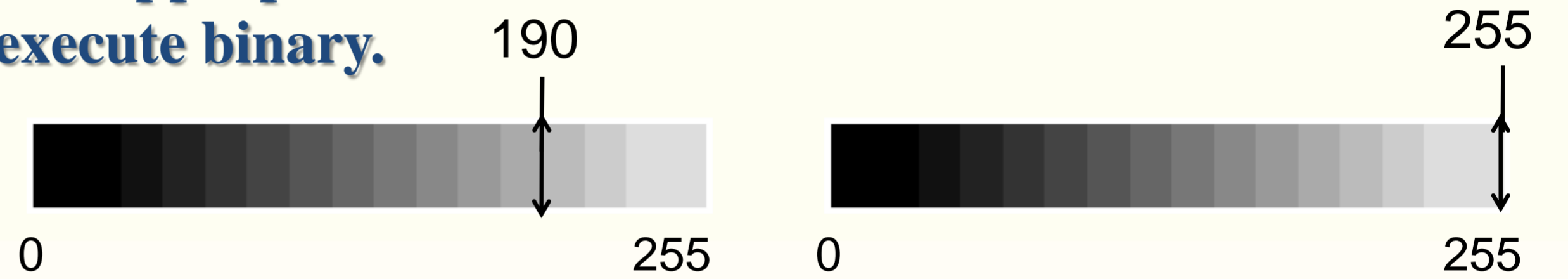
Threshold value : 190
Threshold value : 255

3-4 The parts of extinguish system

- **Solenoid valve：**
  Connect the solenoid valve to the nozzle of the extinguisher.
  Use 12V to control the valve.
  More accurate and smaller than the mechanical arm.

4.Result

5.Future Prospect

- Work on normal background.
- Find the real fire source.
- Control the car moving more accurately.
- Fire extinguisher.