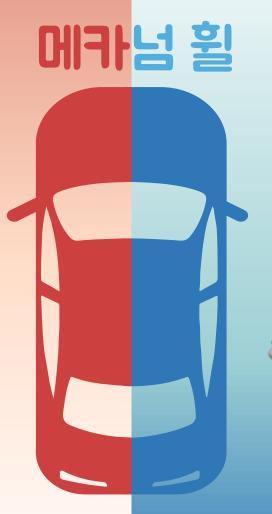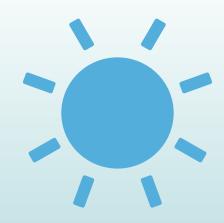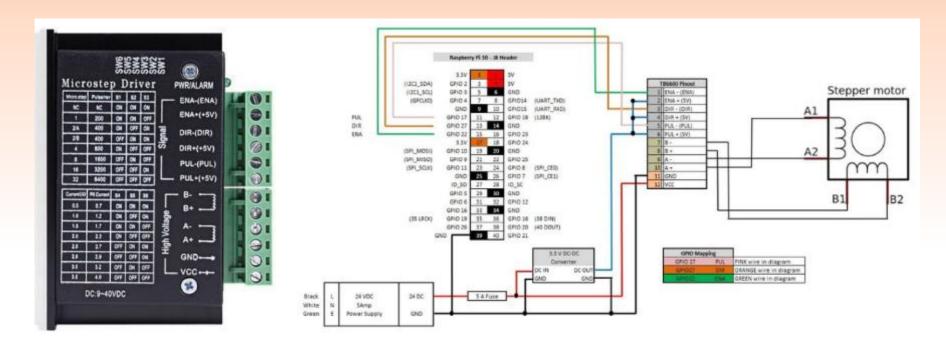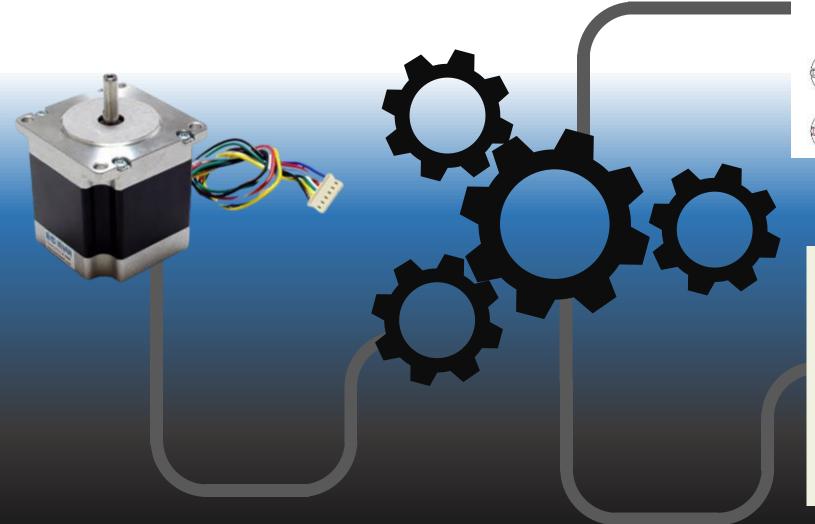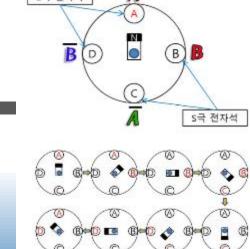# 모터제어, 자율주행

초음파센서 라즈베리파이3 4륜구동

김태윤
오상수
김기영
권형주

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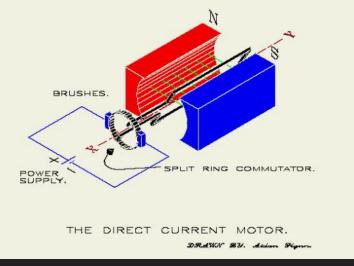
Stepper Motor

차량 조립 순서
이동 메커니즘

차량 조립 순서

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이동 메커니즘

(a) Forward movement

(b) Rightward movement

차량 이동 영상

video - 1

video - 2

motor.py
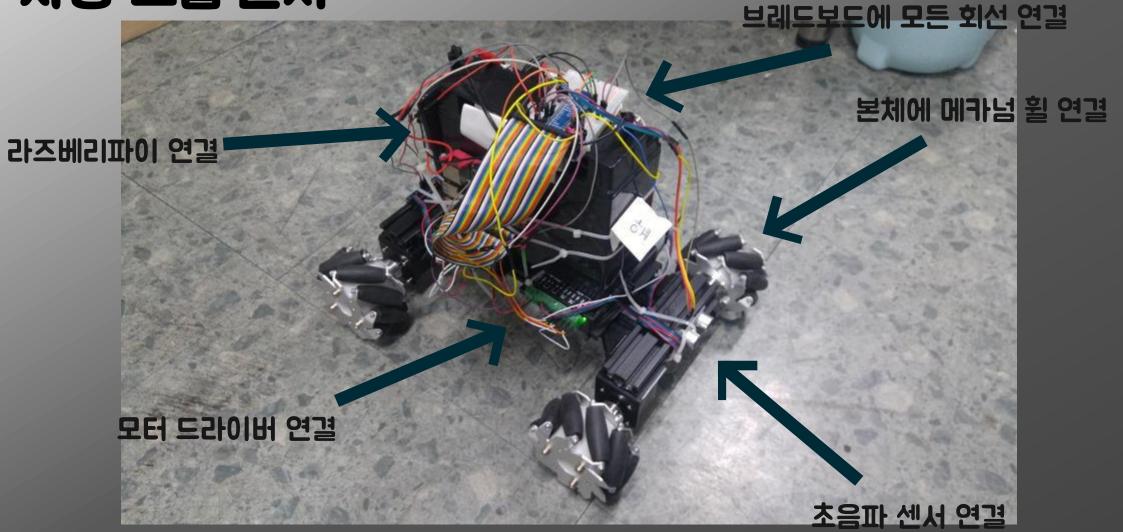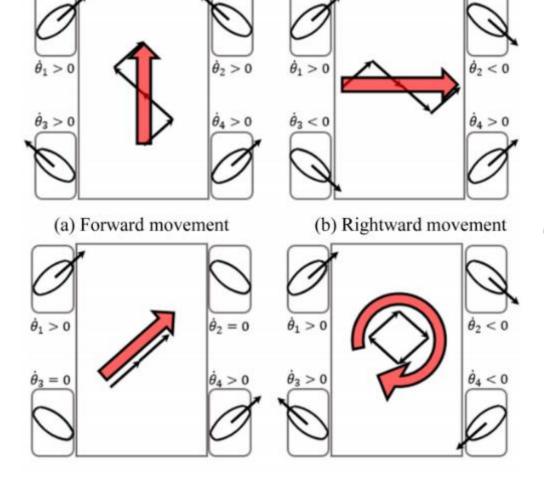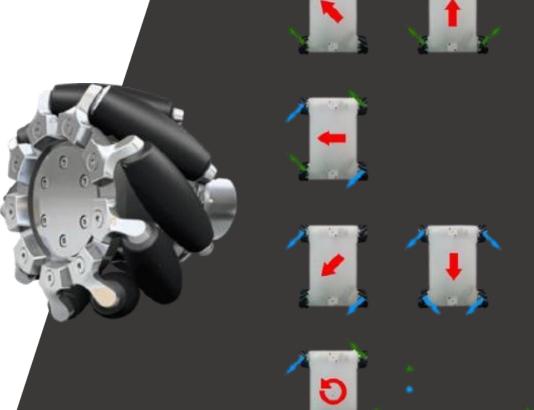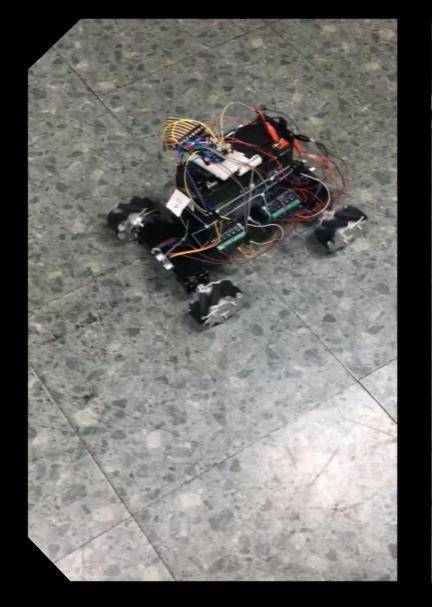
```python
import RPi.GPIO as GPIO
import time
from sensor import getDistance1
from sensor import getDistance2
import threading

GPIO.setmode(GPIO.BCM)
GPIO.setwarnings(False)

class MotorFunction:
    def __init__(self,ena,direction,pul,duration,delay):
        self.ena=ena
        self.direction=direction
        self.pul=pul
        self.duration=duration
        self.delay=delay
        GPIO.setup(ena,GPIO.OUT)
        GPIO.setup(direction,GPIO.OUT)
        GPIO.setup(pul,GPIO.OUT)

    def forward(self):
        GPIO.output(self.ena,GPIO.HIGH)
        GPIO.output(self.direction,GPIO.HIGH)

        GPIO.output(self.pul,GPIO.HIGH)
        time.sleep(self.delay)
        GPIO.output(self.pul,GPIO.LOW)
        time.sleep(self.delay)

    def reverse(self):
        GPIO.output(self.ena, GPIO.HIGH)
        GPIO.output(self.direction, GPIO.LOW)
        GPIO.output(self.pul, GPIO.HIGH)
        time.sleep(self.delay)
        GPIO.output(self.pul, GPIO.LOW)
        time.sleep(self.delay)

    def stop(self):
        GPIO.output(self.ena, GPIO.LOW)
        return

    def speed(self,speed):
        self.delay = 0.00001 % speed
        return self.delay
```
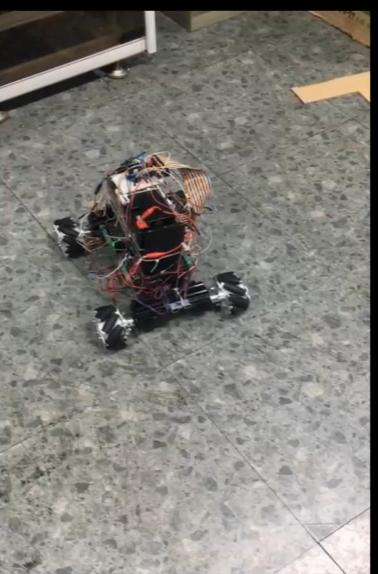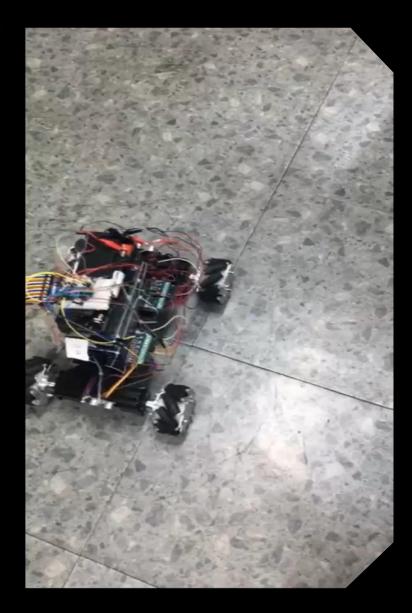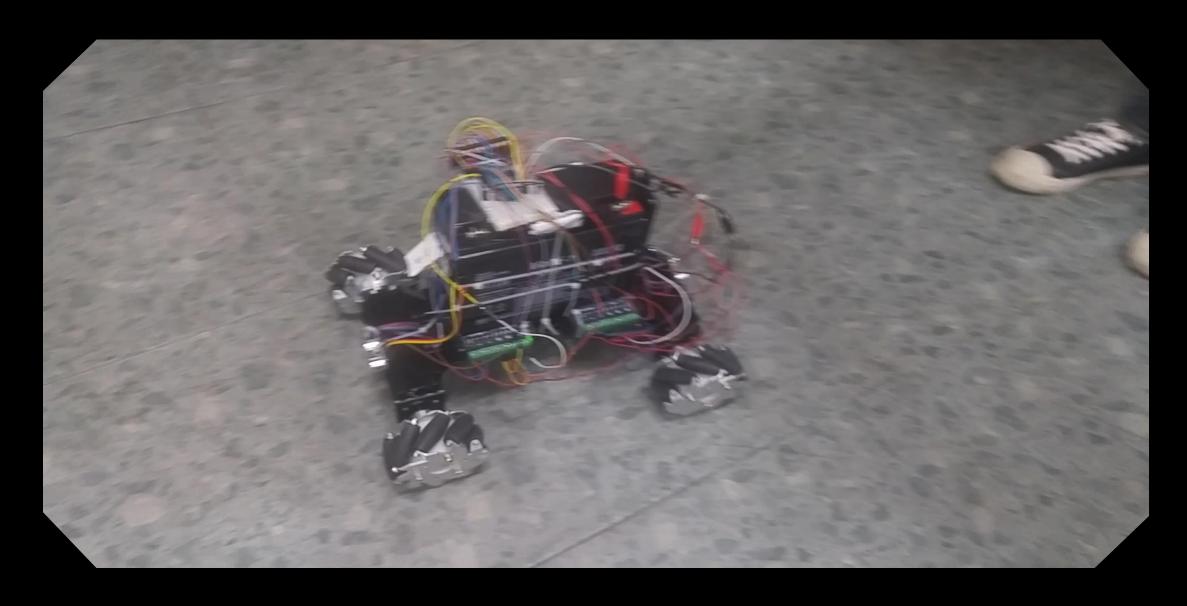
보완해야 할 점 & 앞으로의 계획

소량의 데이터,
판단할 수 없는 정보

상용화 단계 가정 시
안전을 위한 H/W 추가 필요성

H/W

불편한 작동 방식

– E N D –