

# 쓰레기 청소 휴머노이드

냥만고양이

# 목차

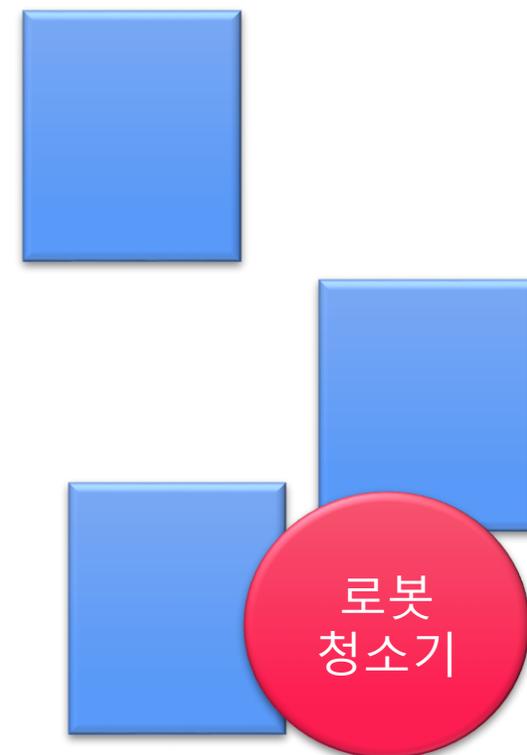
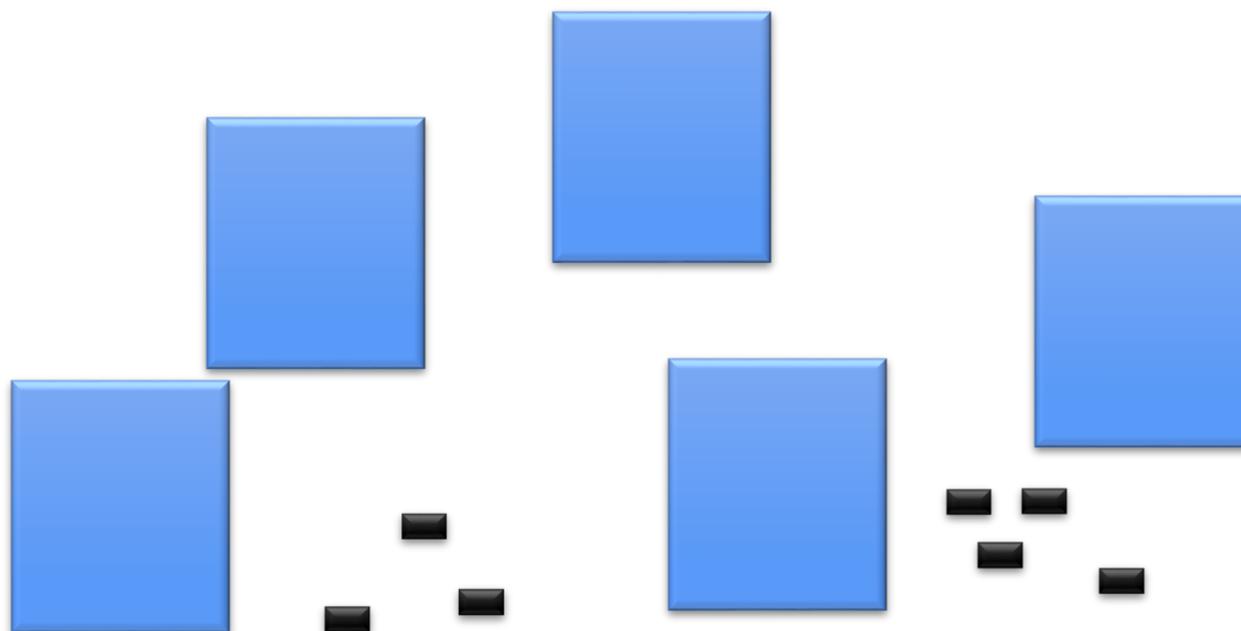
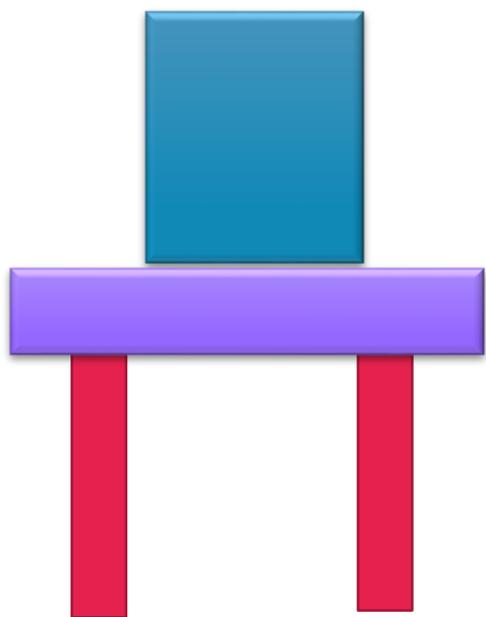
- 개요
- S/W 및 알고리즘
- 시연 영상
- 발전 방향
- Q&A

# 개요

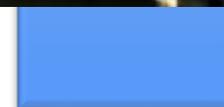
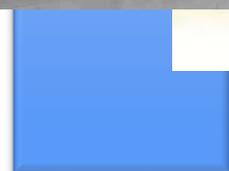
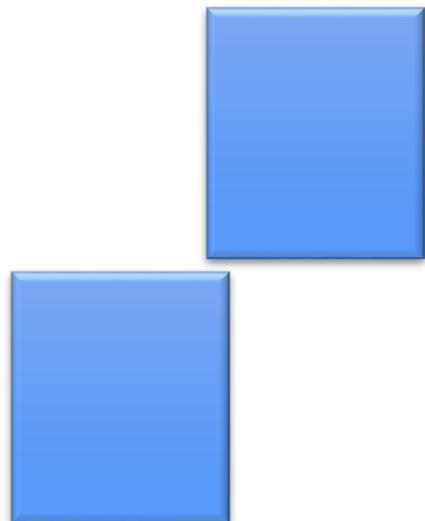
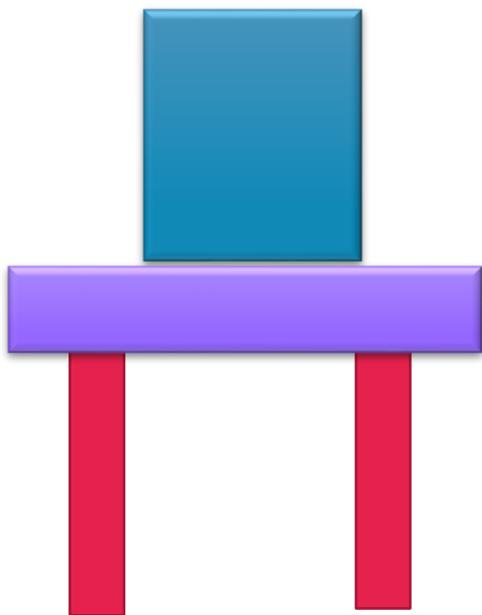
# 동기



# 동기



# 동기



# 구성

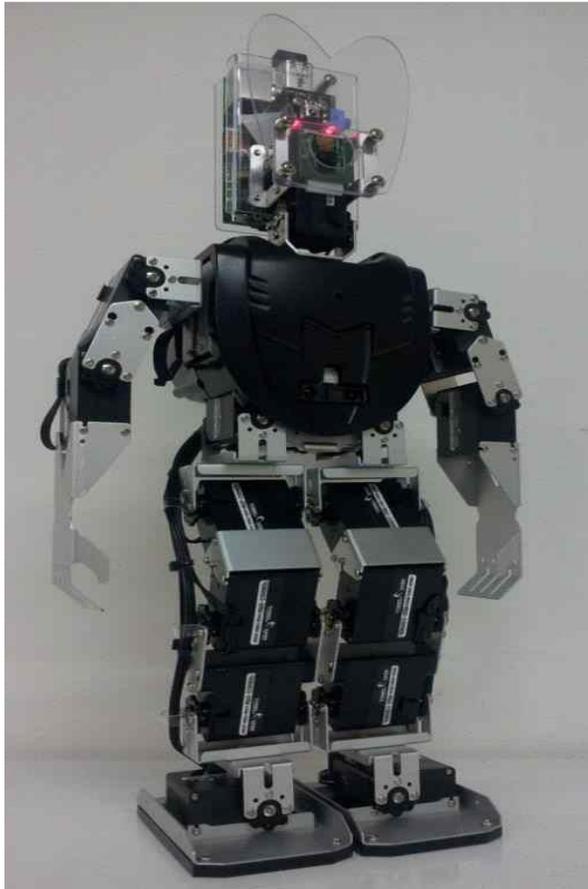


<휴머노이드>



<라즈베리파이>

# 구성



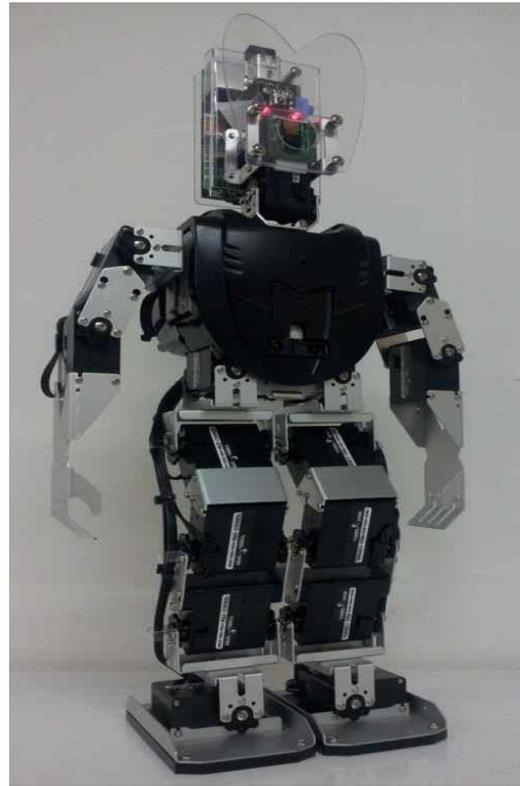
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로봇 명	MF-RAPI
크기	100mm x 190mm x 410mm
무게	1.4kg
관절 수	18관절
두뇌보드	라즈베리파이B (4G 메모리)
제어보드	MR-C302FX
배터리	NIMH 6V 1500mA
동작시간	약 20 ~ 30분
두뇌보드 OS	Respbian Linux
제어보드 OS	로보베이직
무선랜 탑재	AP기능 포함
센서	2축 기울기센서
	2축 자이로 센서
	적외선 거리감지 센서



# 구성

모션 제어  
시리얼 통신  
로보 베이직 프로그램



<휴머노이드>

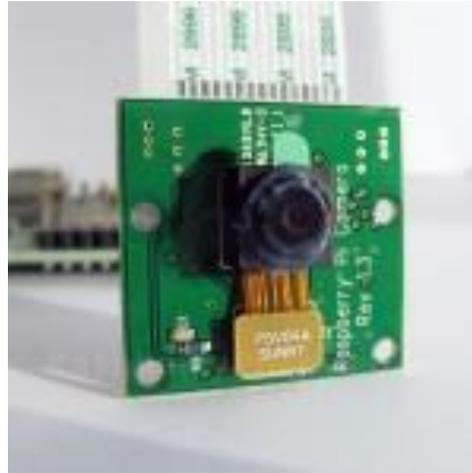


<라즈베리파이>

영상처리  
- OpenCV  
시리얼 통신  
- IwiringPi  
Raspbian Linux  
C/C++

# 알고리즘

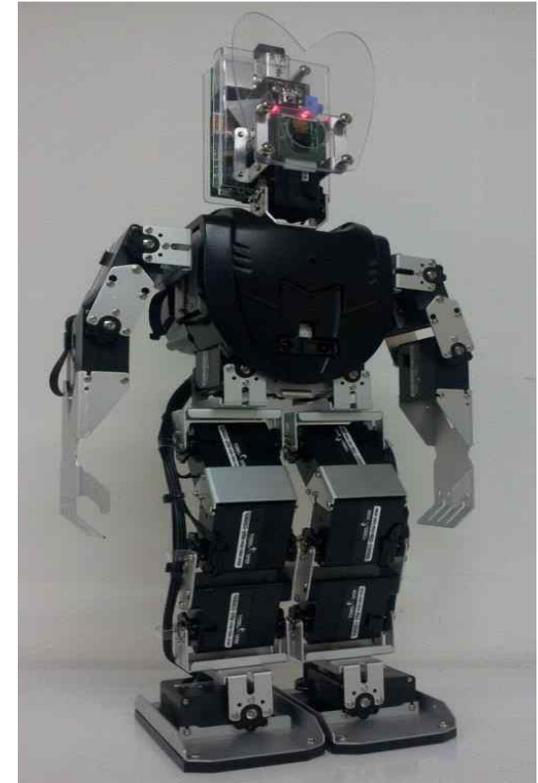
# 알고리즘 구성

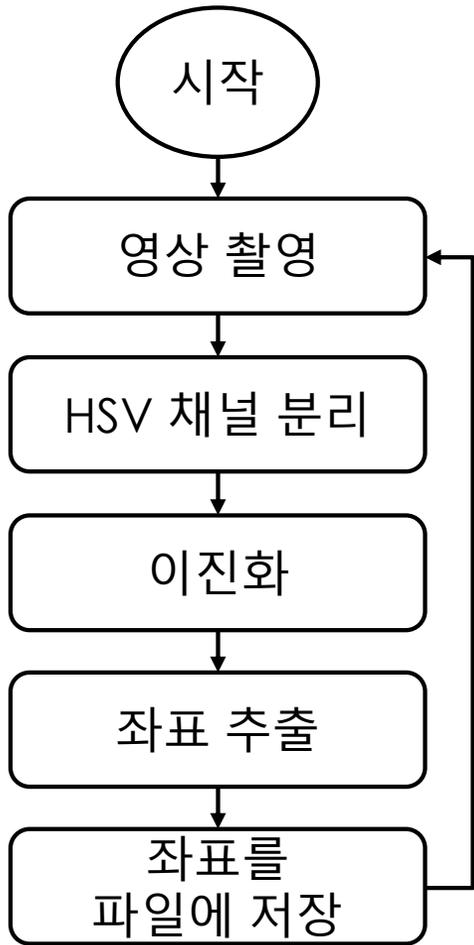


영상처리



시리얼 통신





원본 영상 및 좌표

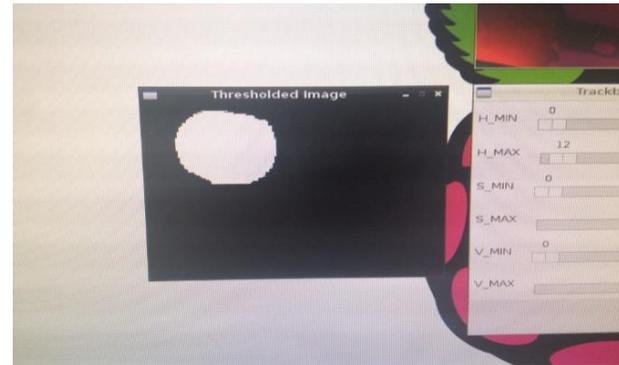


HSV 분리 화면

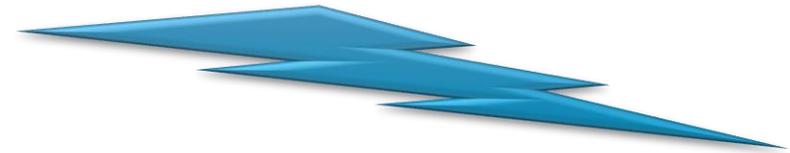


영상처리

- OpenCV

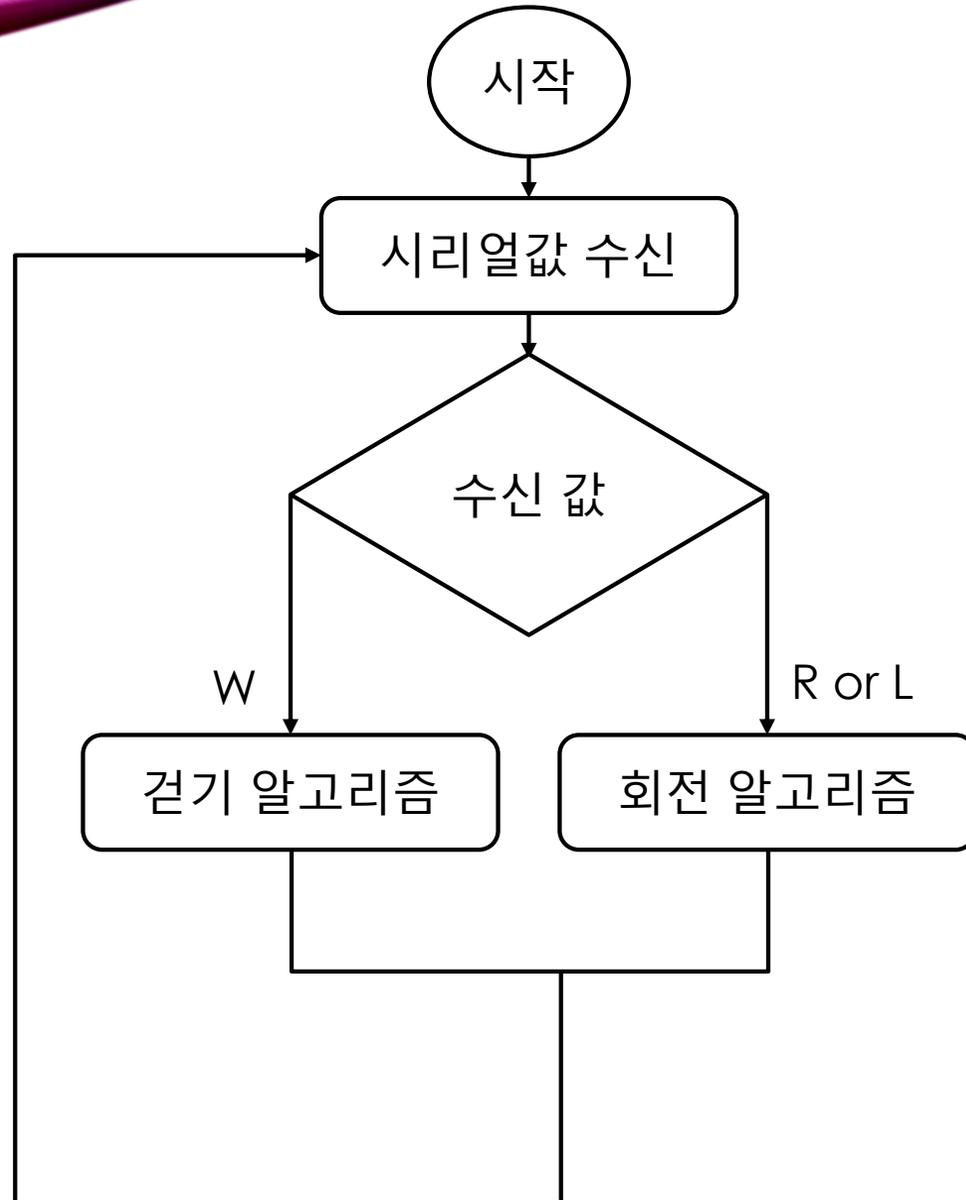


이진화



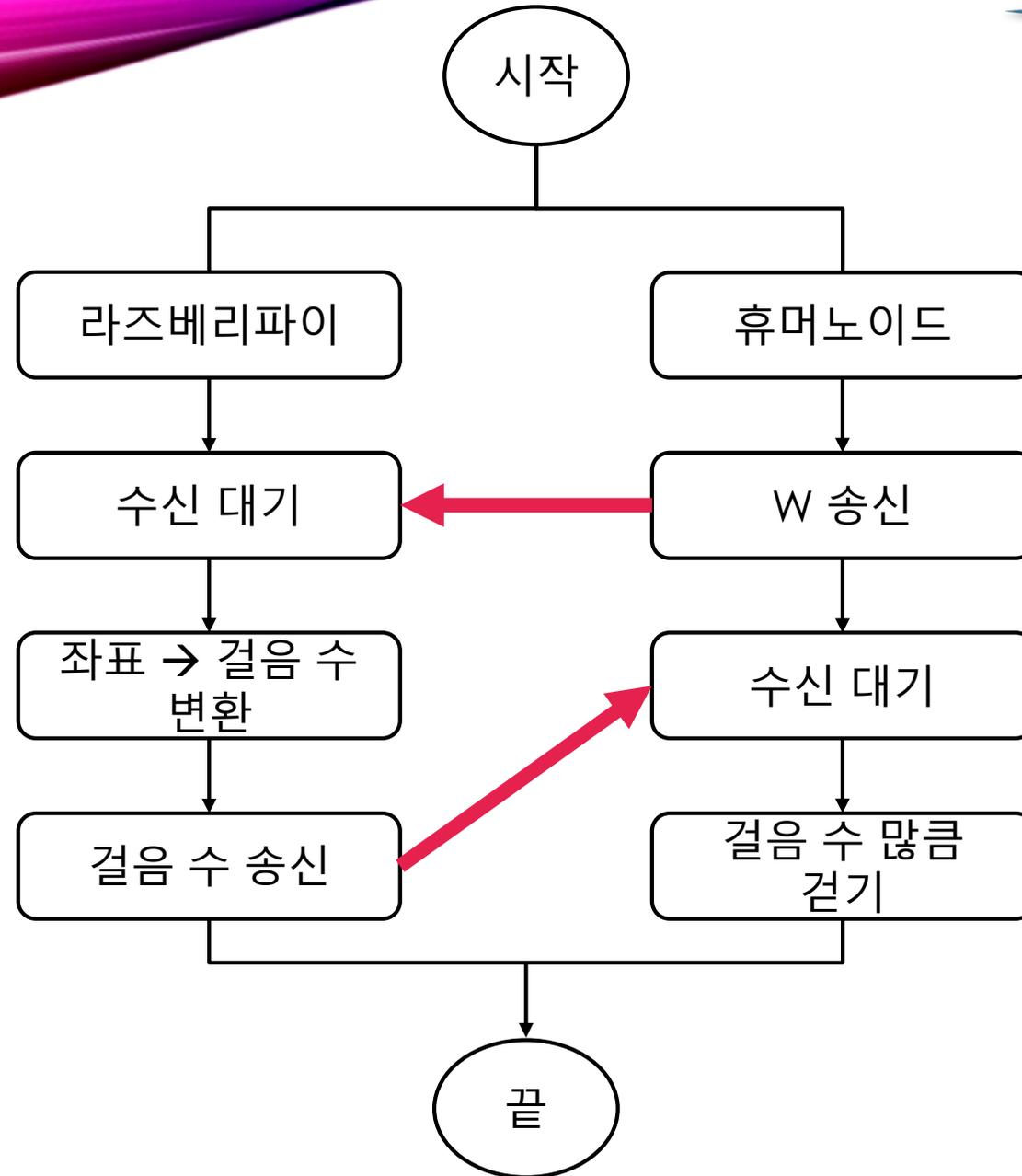
# 시리얼 통신

- IwiringPi



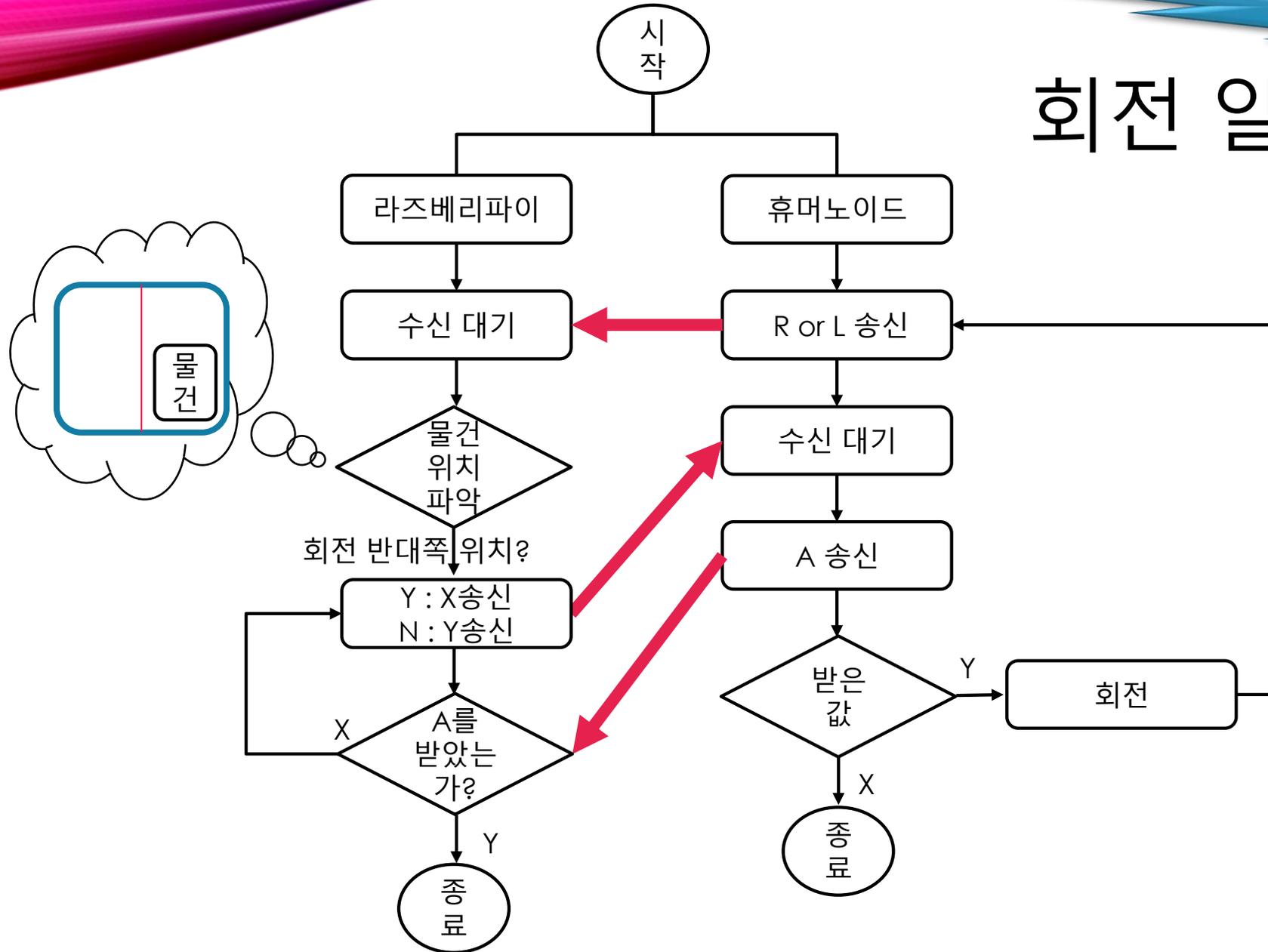
# 걷기 알고리즘

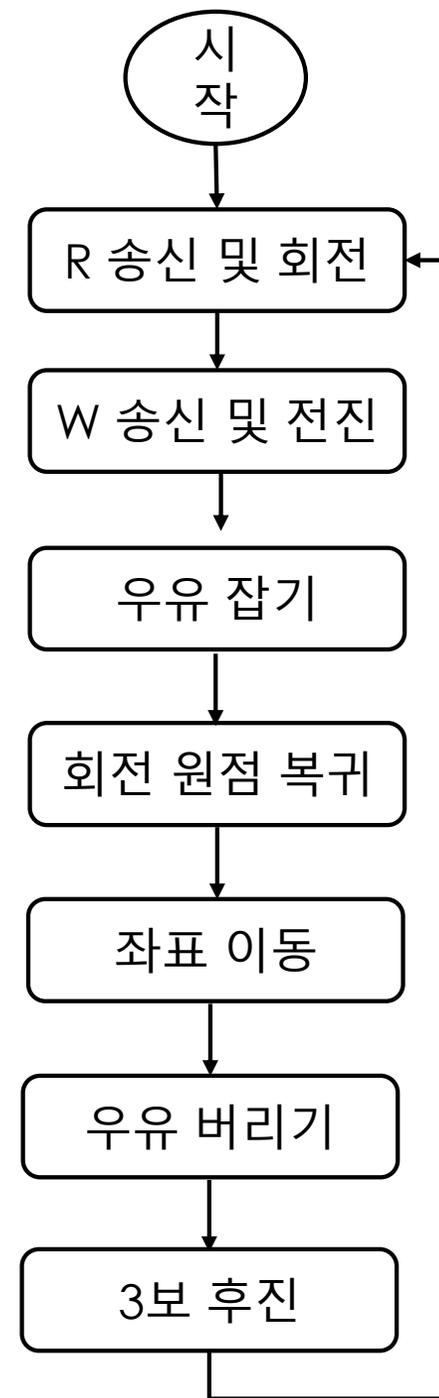
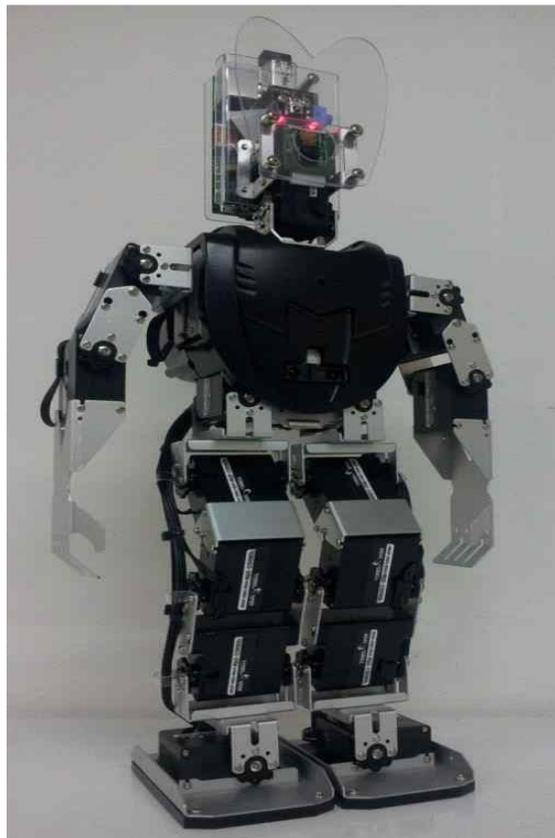
- IwiringPi



# 회전 알고리즘

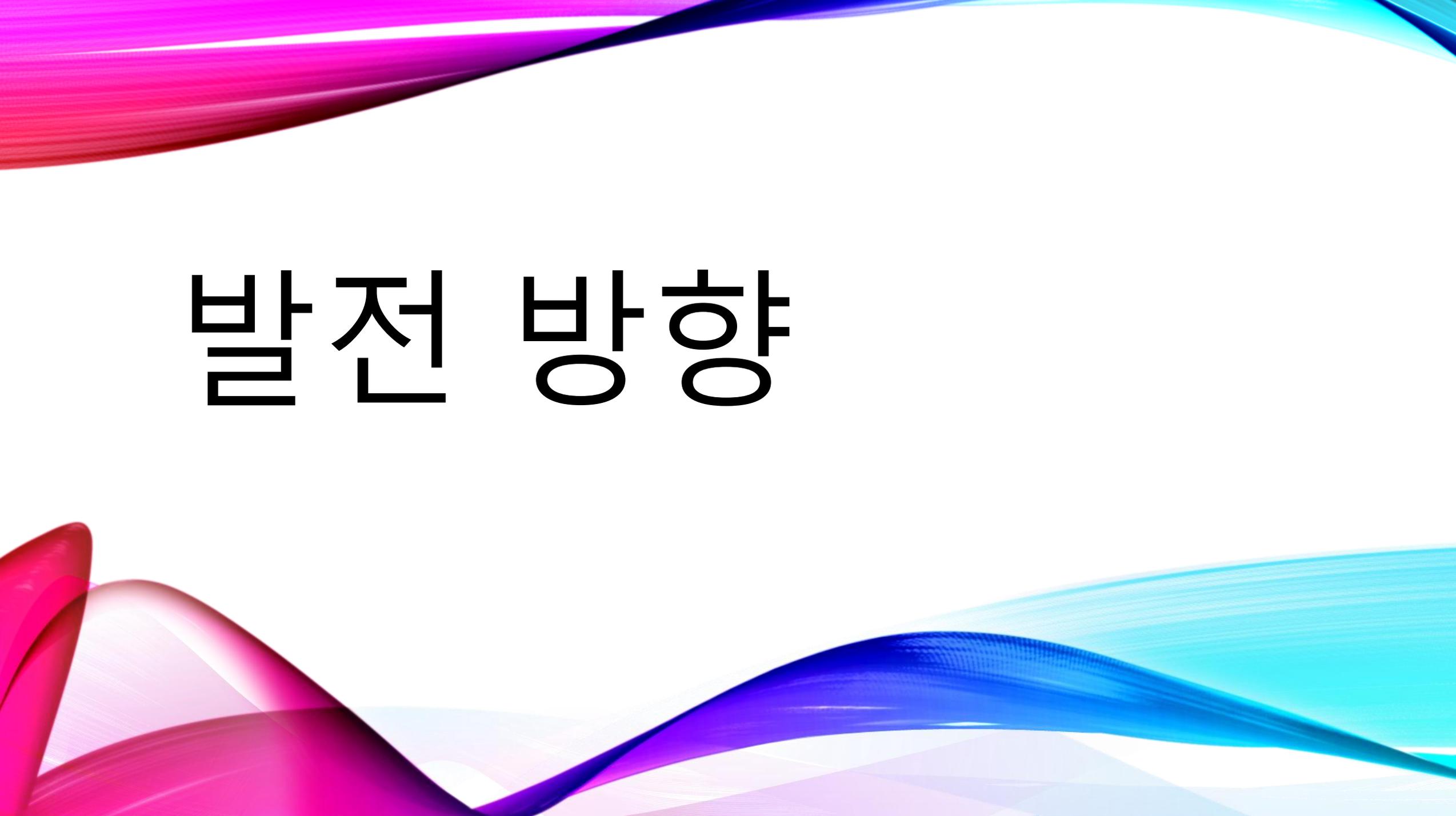
- IwiringPi





# 시연 영상





# 발전 방향

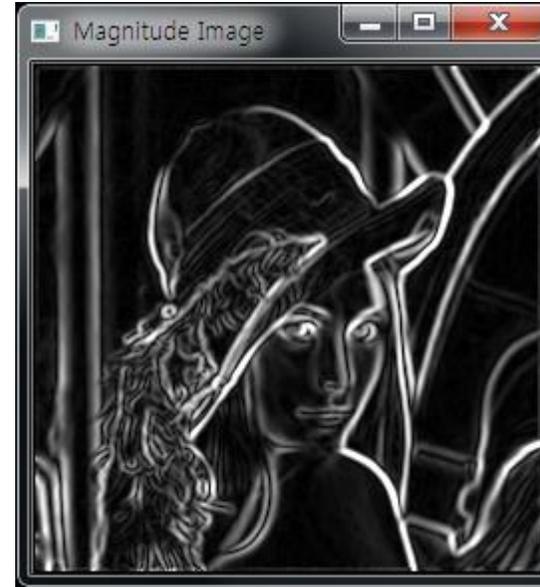
# 발전 방향



보폭과 회전각을 이용한 좌표 측정



자이로 센서와 적분 알고리즘을  
통한 좌표 측정



색상 검출



윤곽선 검출

로보베이직

: 제한적인 프로세서 이용



컴파일러 변경을 통한 보다 능동적인 H/W이용



Q & A