

로봇공학 응용

장기홍, 전승환

- 장기홍 40%

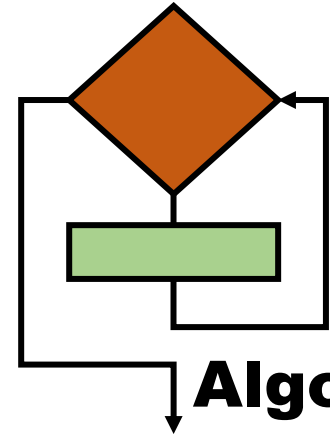
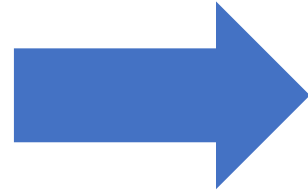
- Avr

- 전승환 60%

- 하드웨어 설계

- PC 영상처리

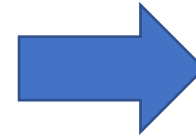
영상 처리



Algorithm

하드웨어

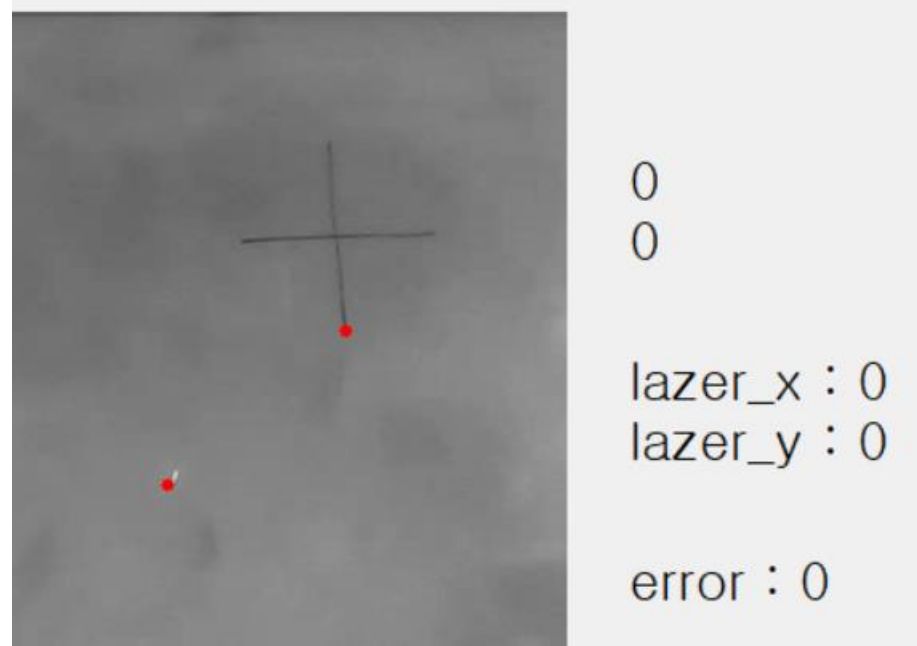
- 1. 모터 업그레이드
- 2. 프레임 재설계
- 3. P control



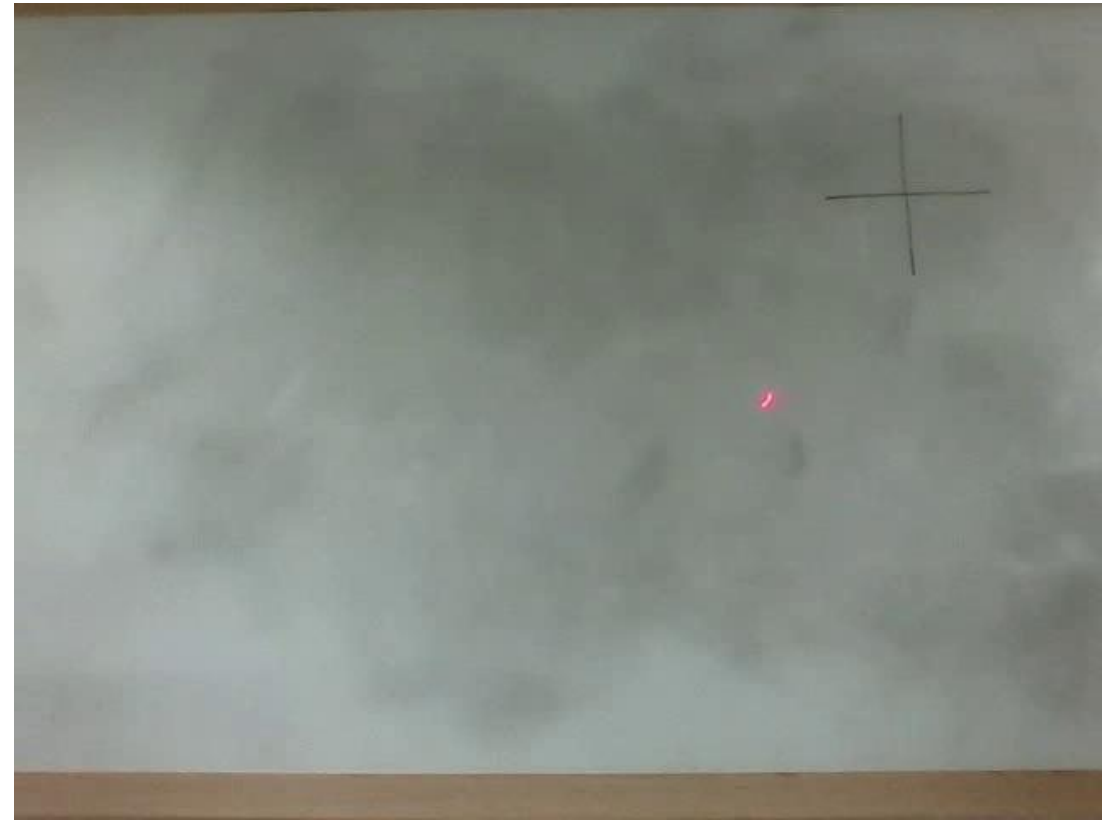
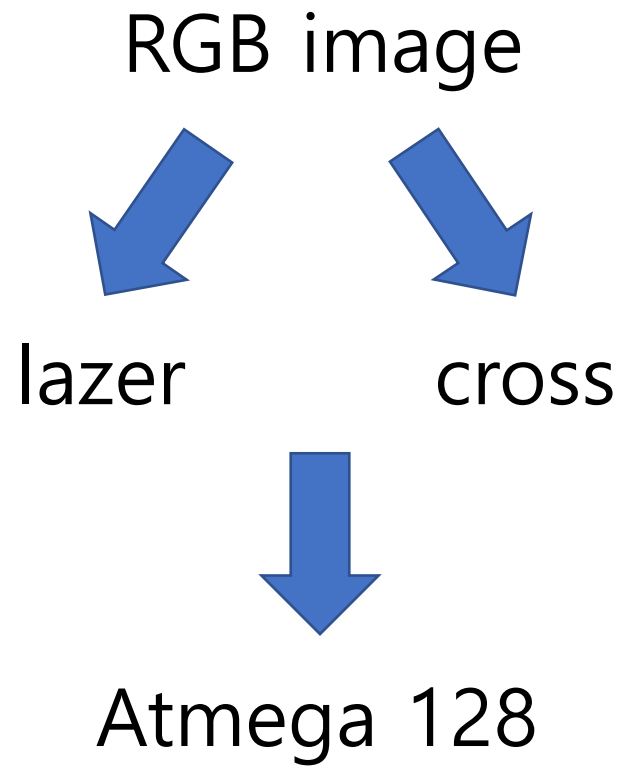
영상처리



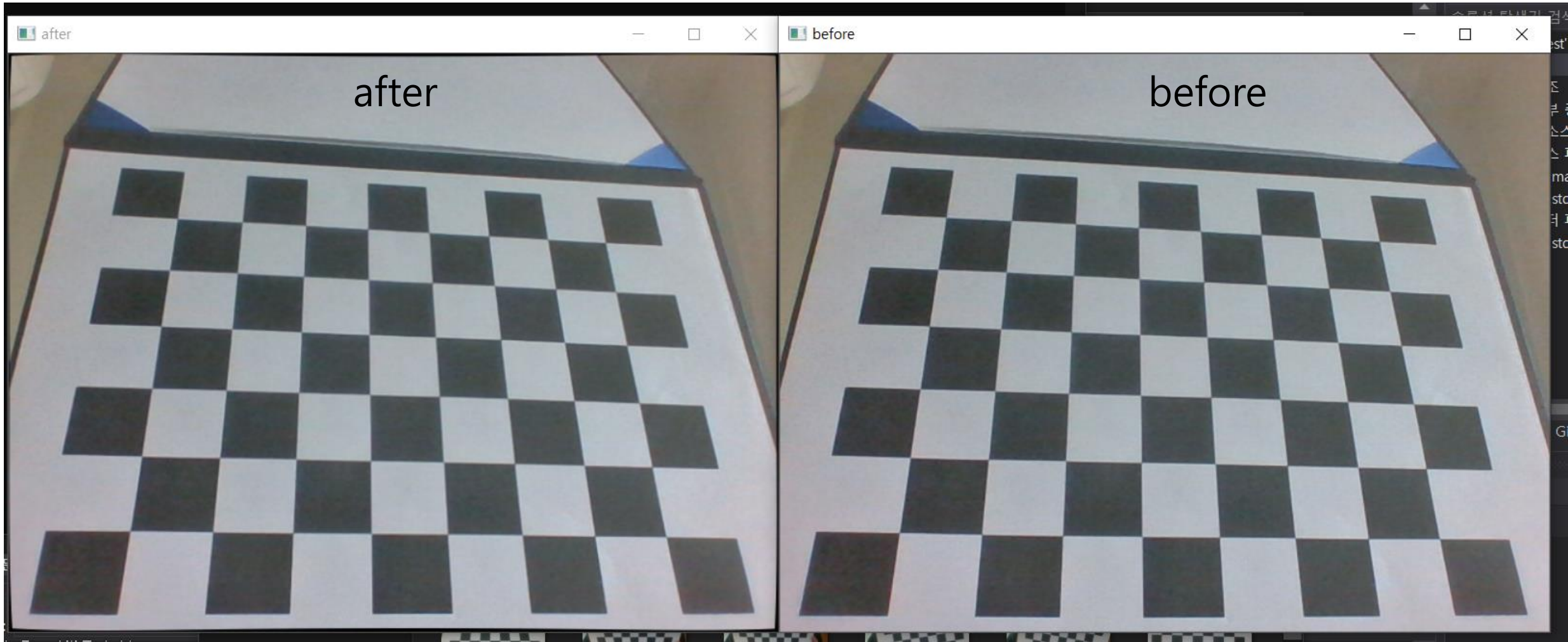
Python



영상처리

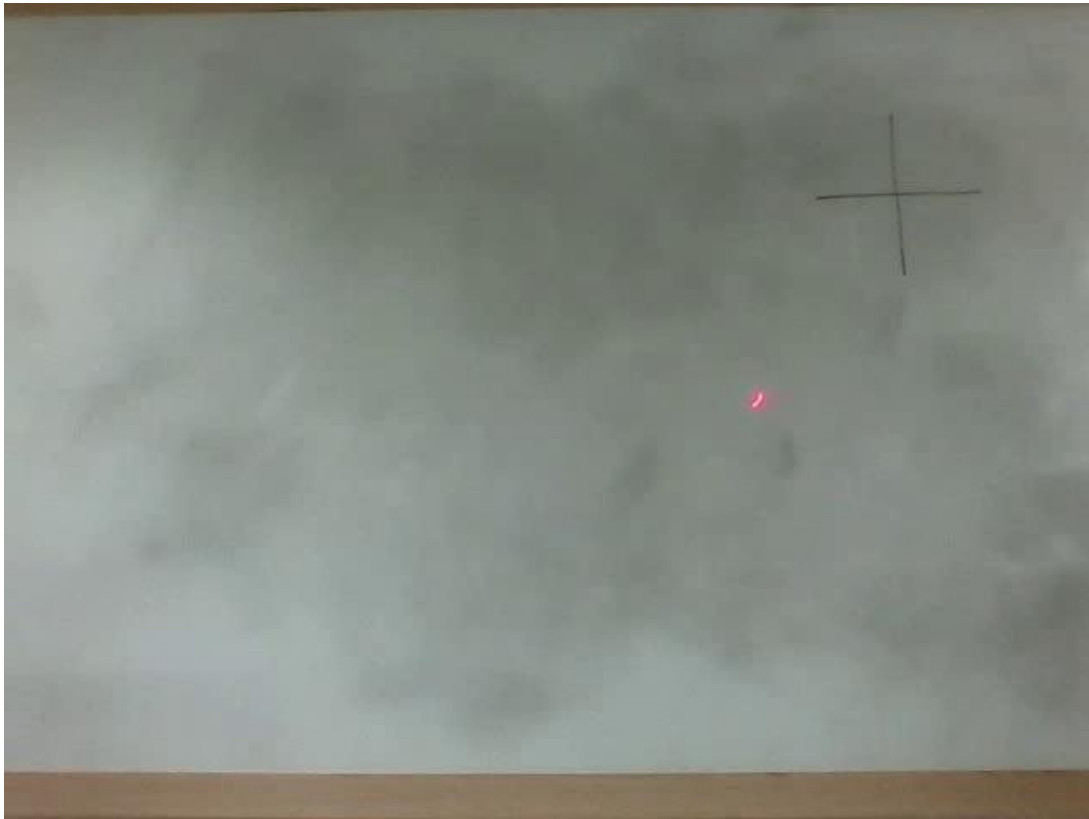


Camera calibration



영상처리

RGB

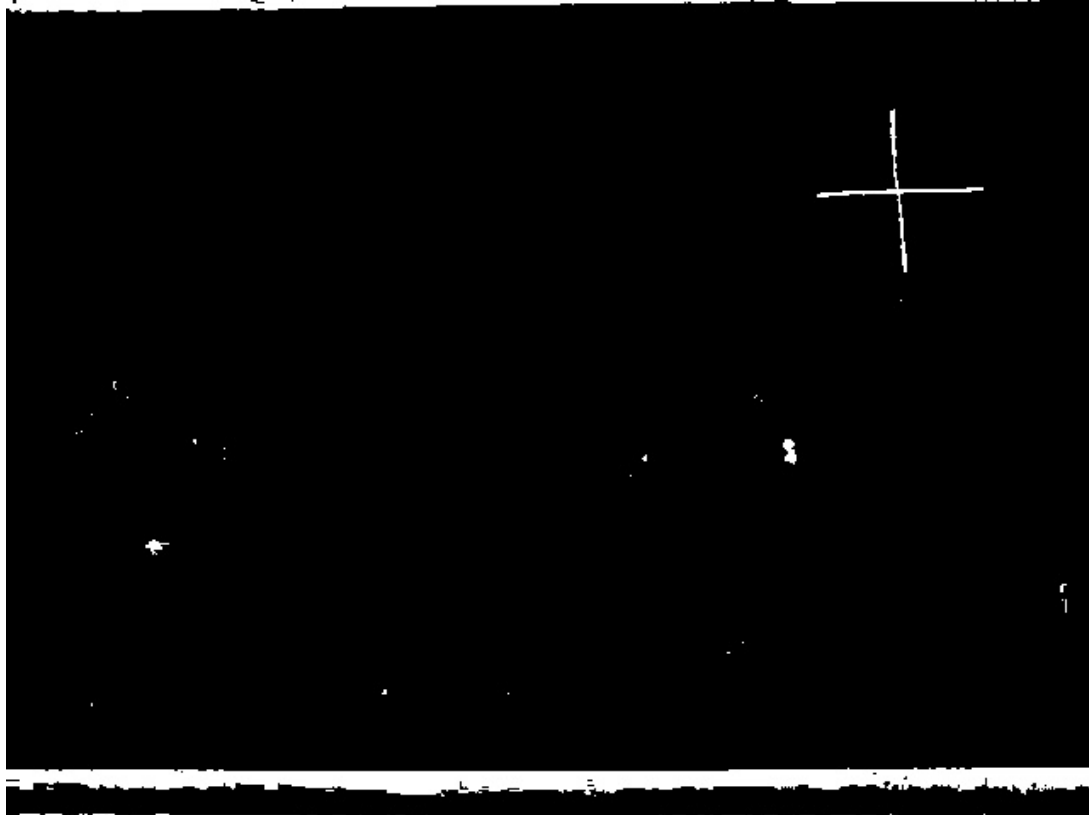


gray

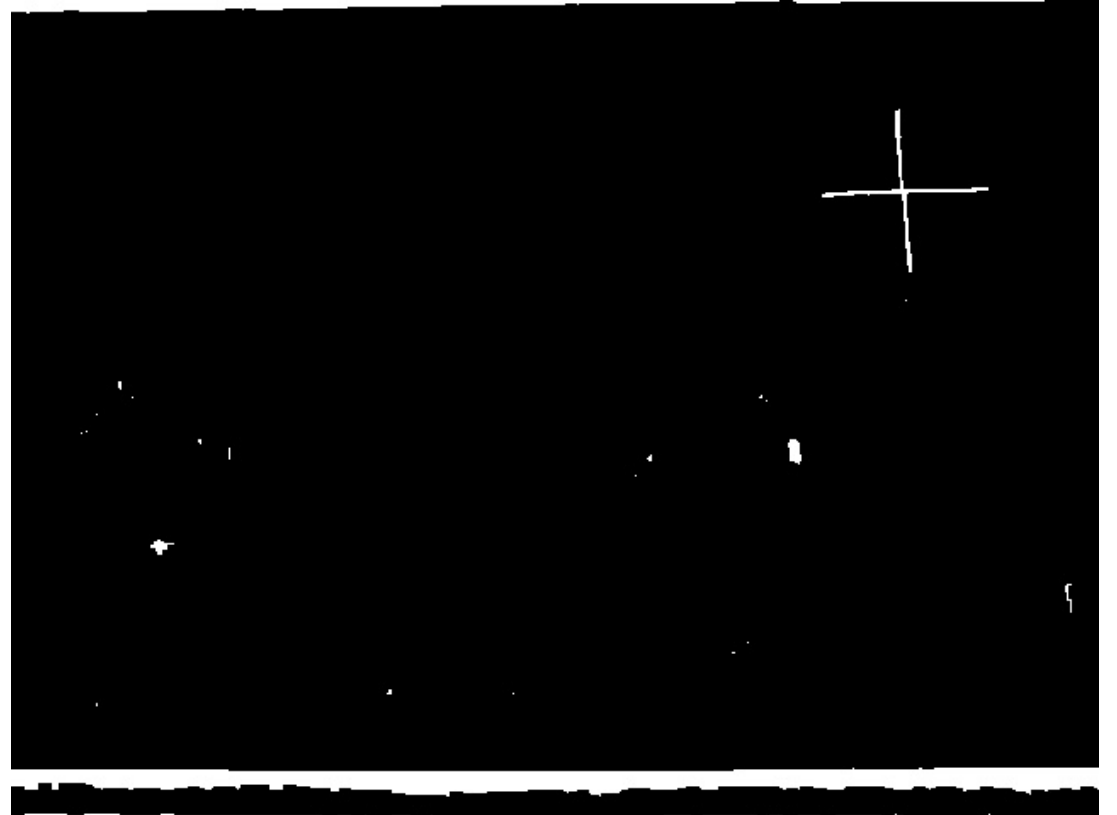


영상처리

Adaptive threshold



mopology – close



영상처리



Labeling

$200 < \text{면적} < 600$



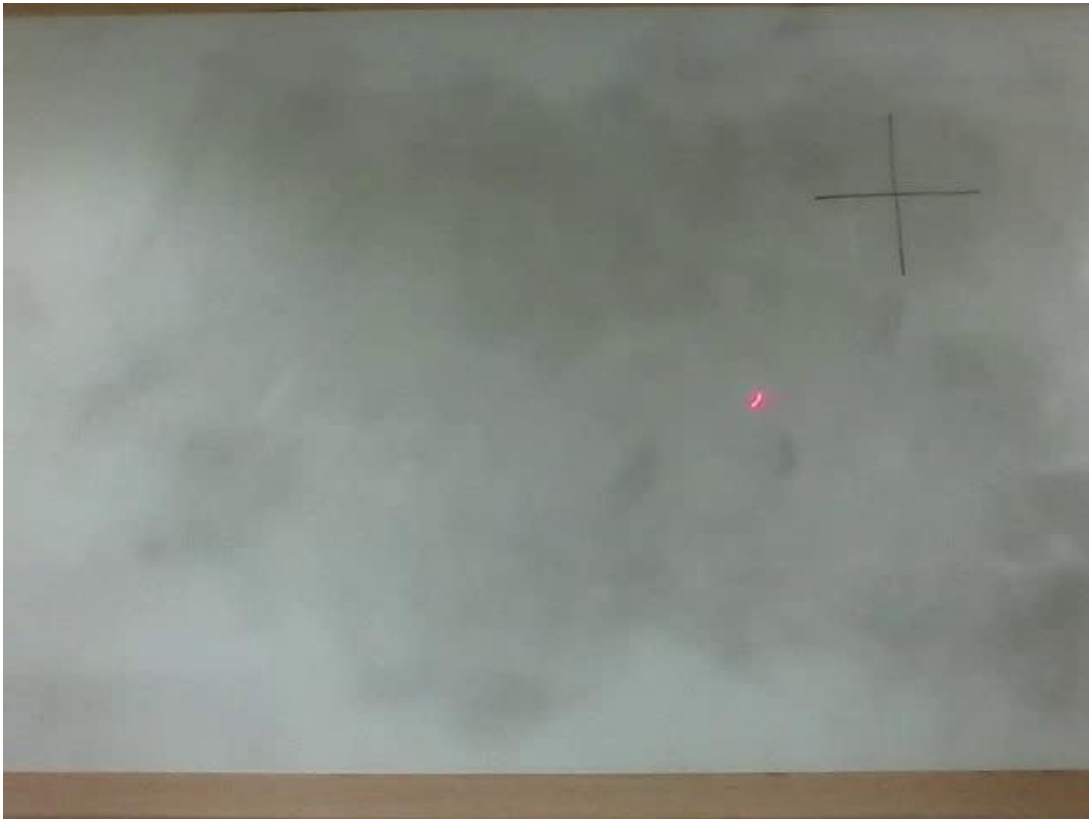
Contour

길이 > 200



영상처리

RGB

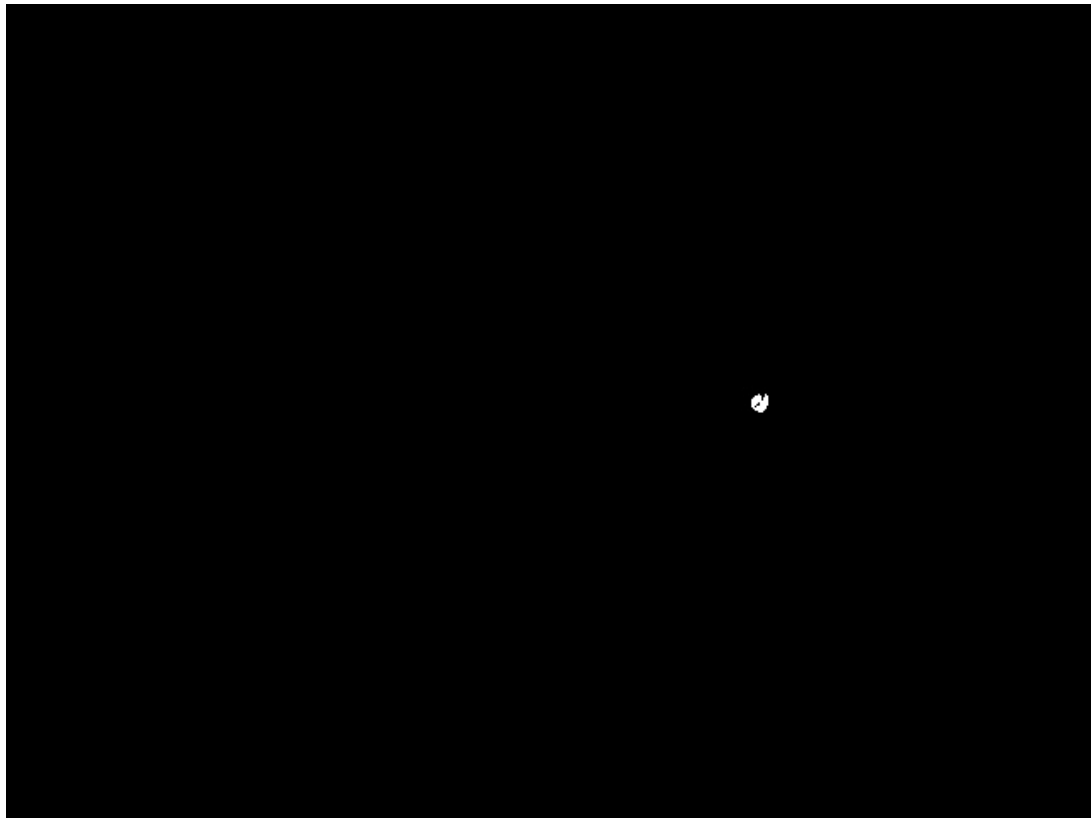


HSV



영상처리

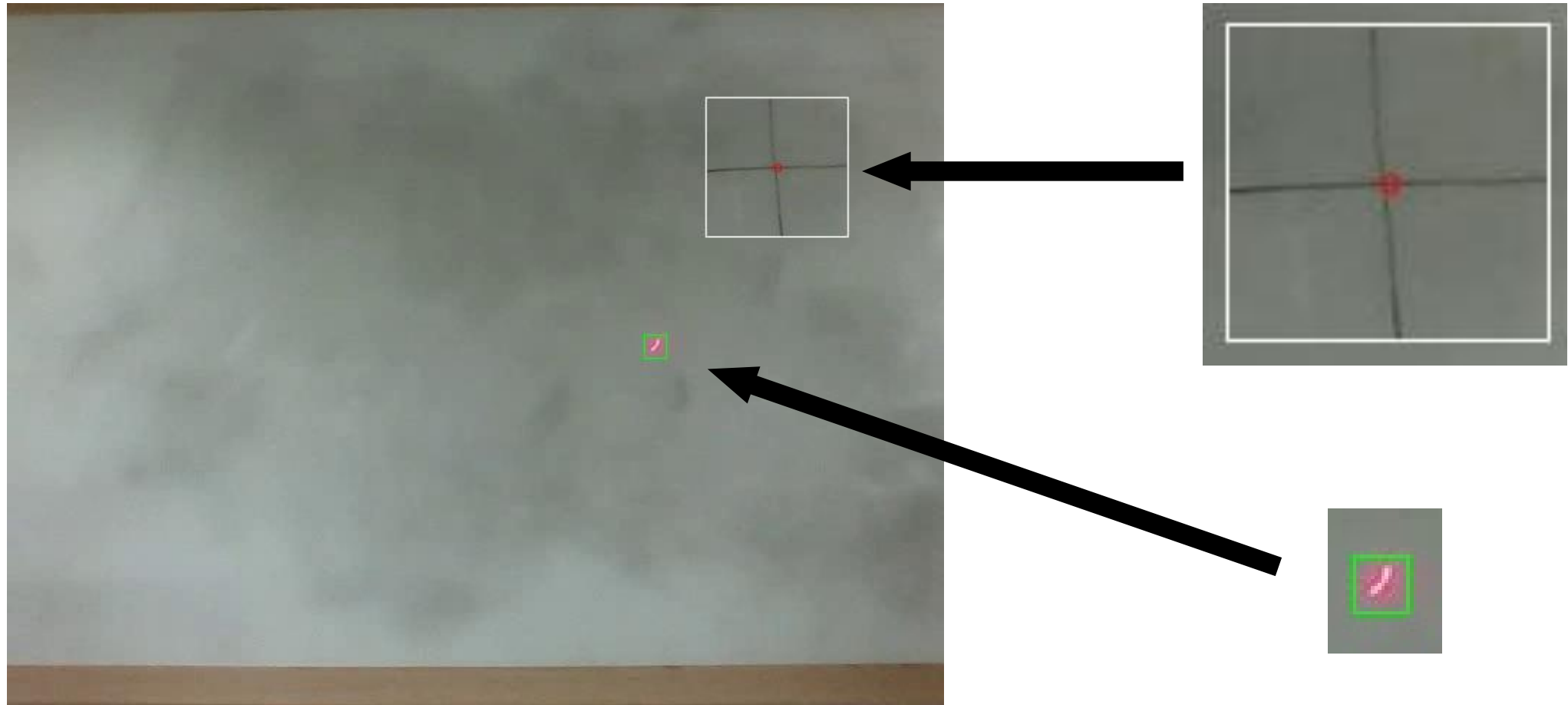
빨간색 영역 추출



labeling



영상처리



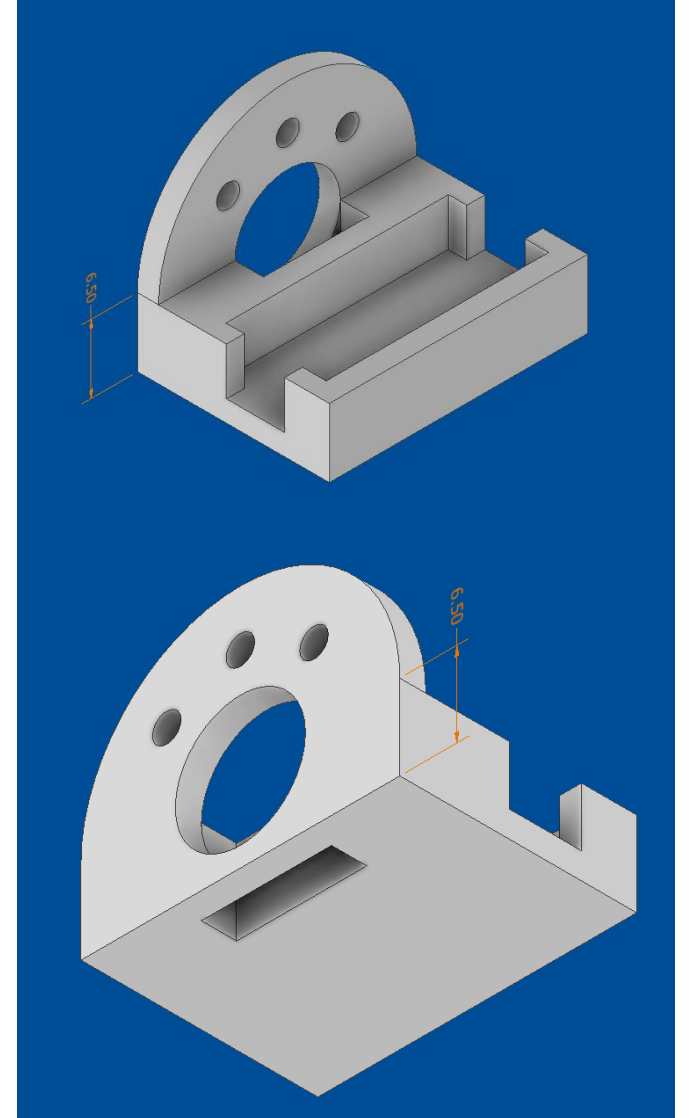
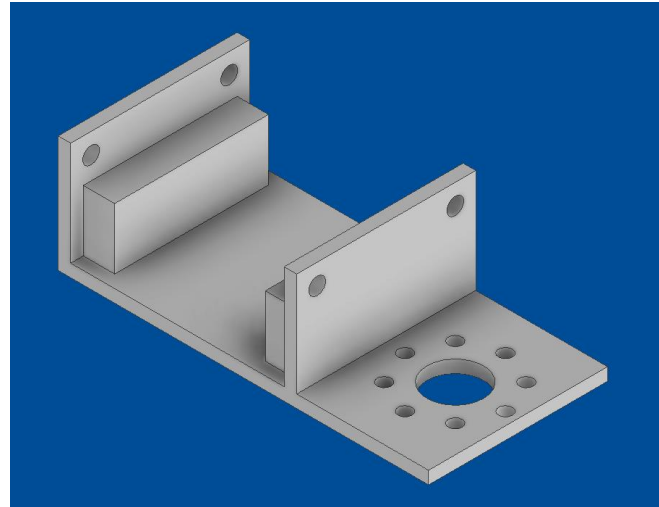
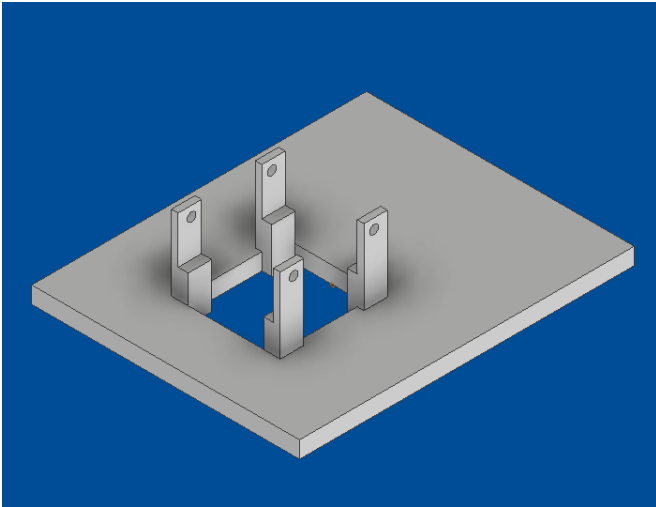
하드웨어



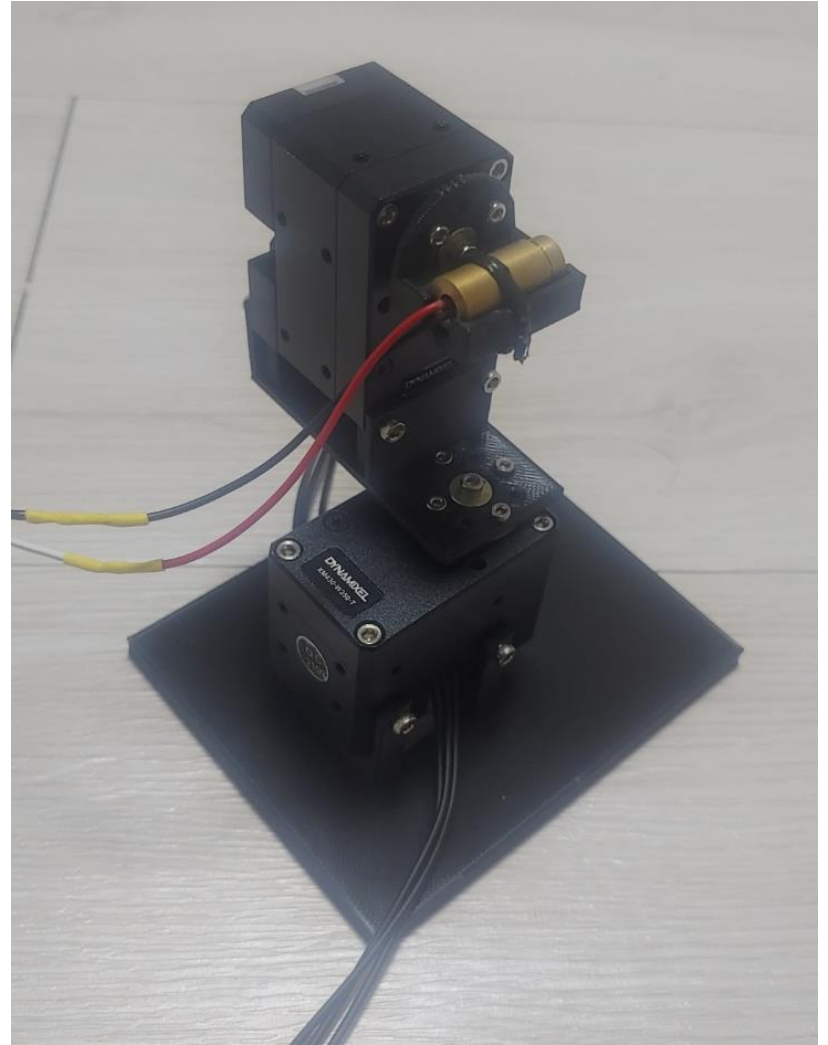
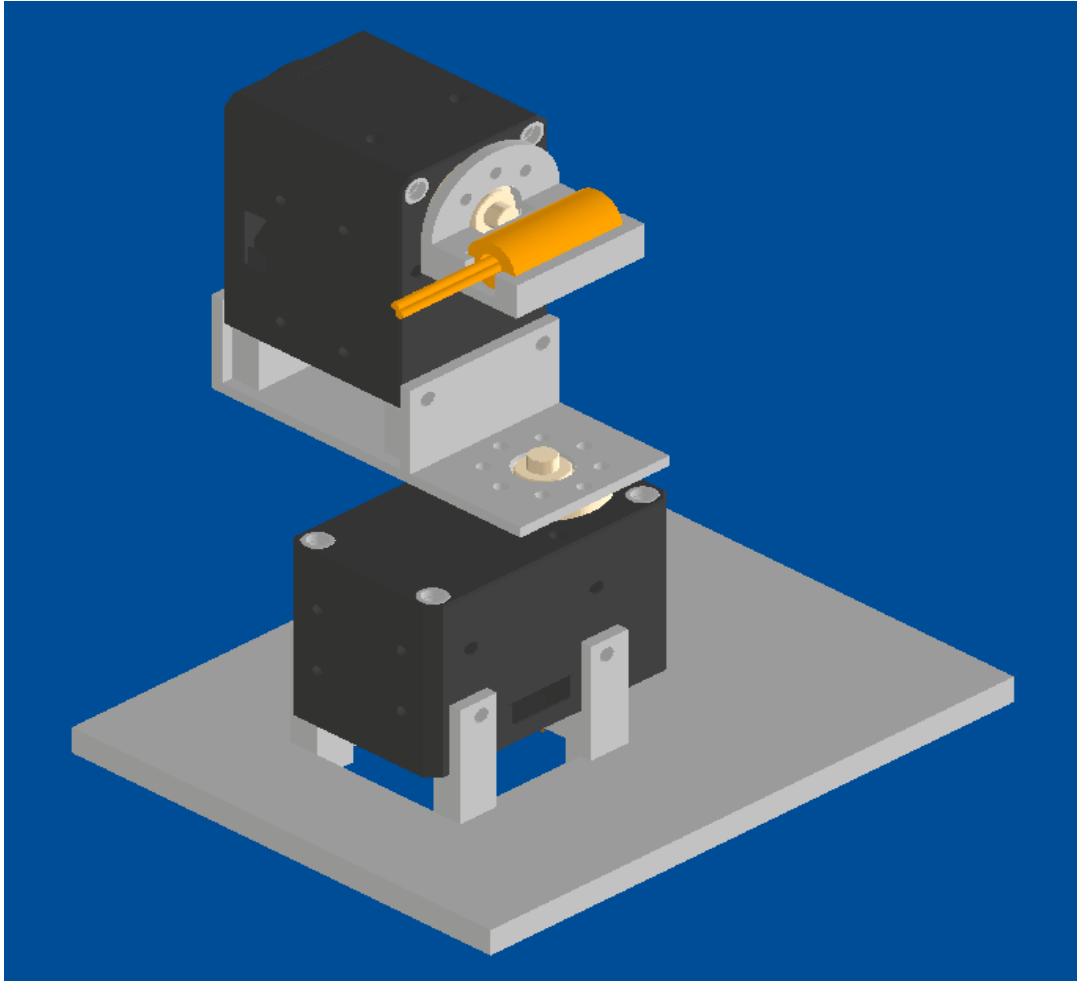
XM430-W3350-T

Resolution [deg/pulse]	0.0879
Step [pulse/rev]	4,096
Angle [degree]	360

하드웨어



하드웨어



Avr

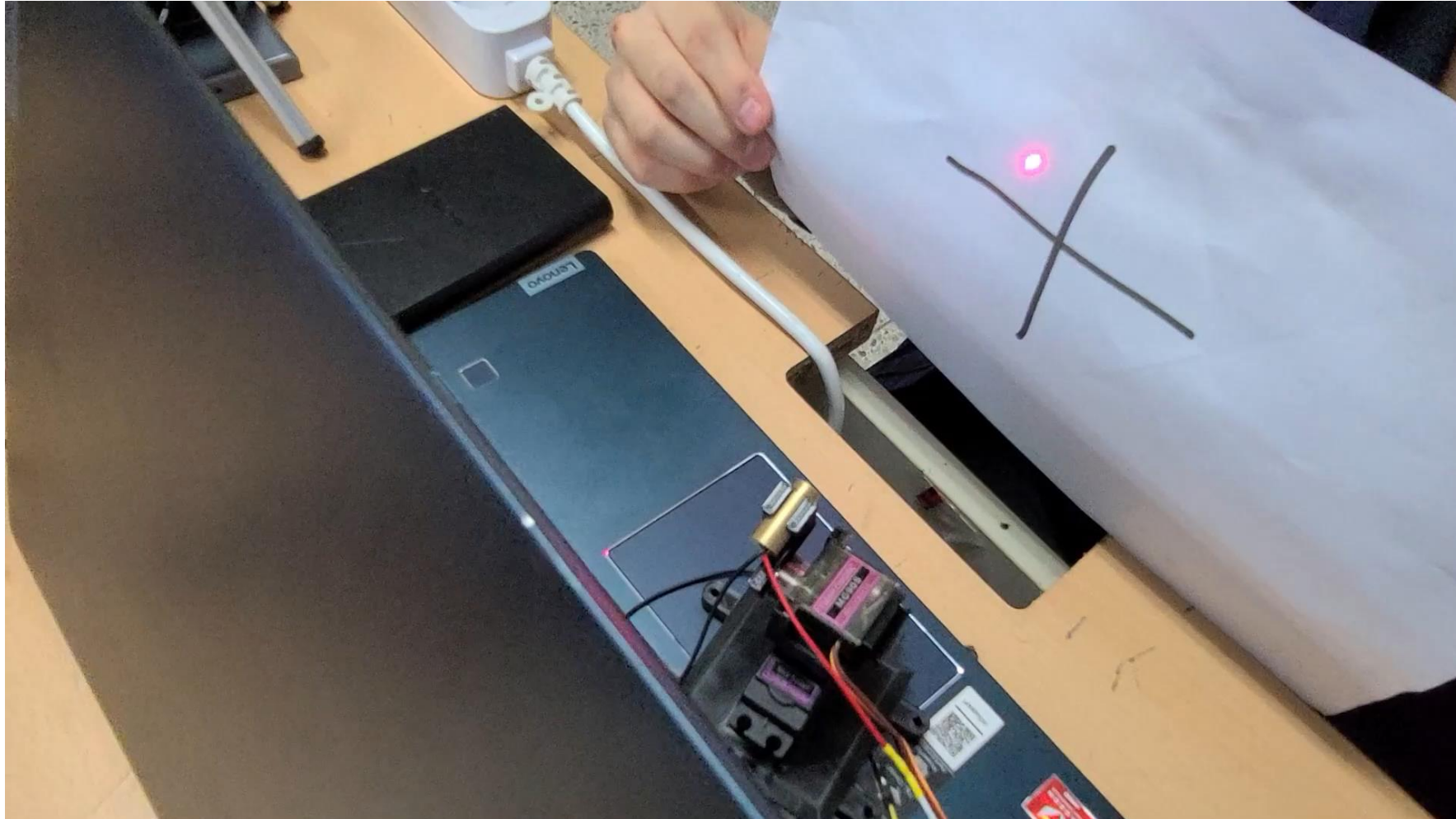


" $C_x C_y L_x L_y Wn$ "

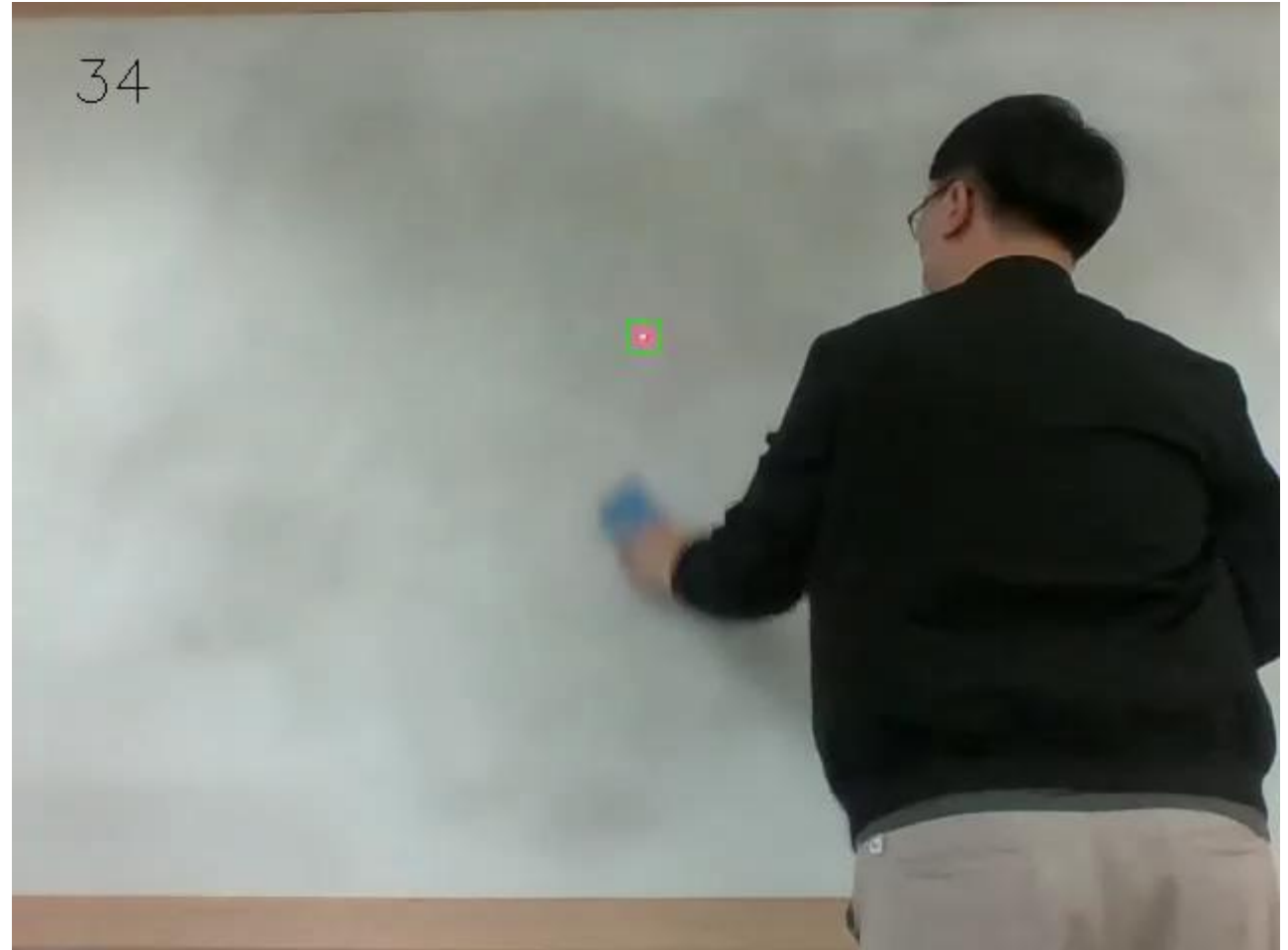
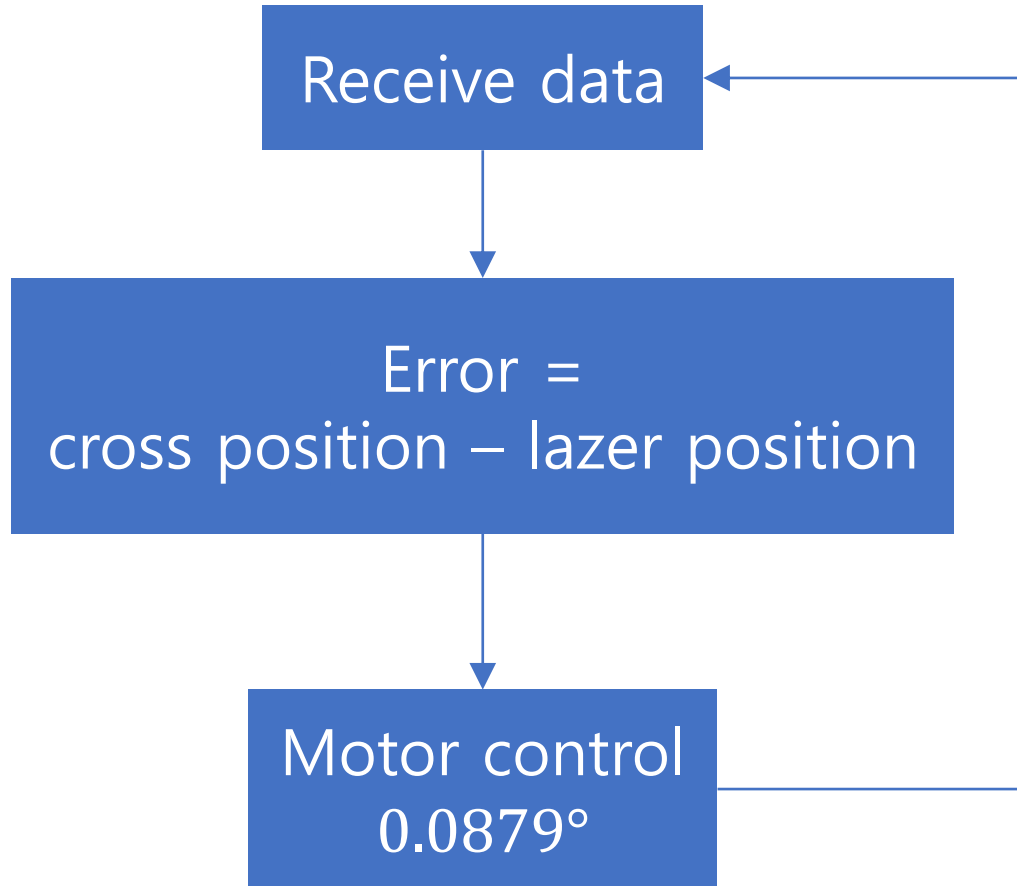


Atemga 128

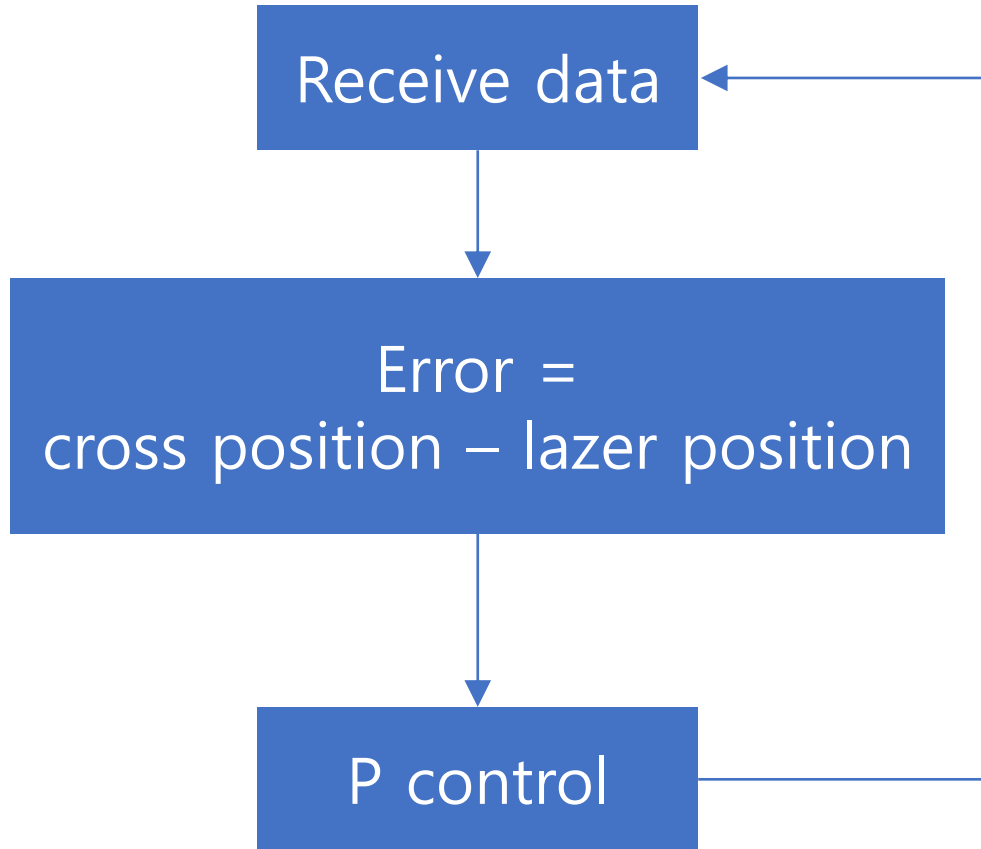
기존



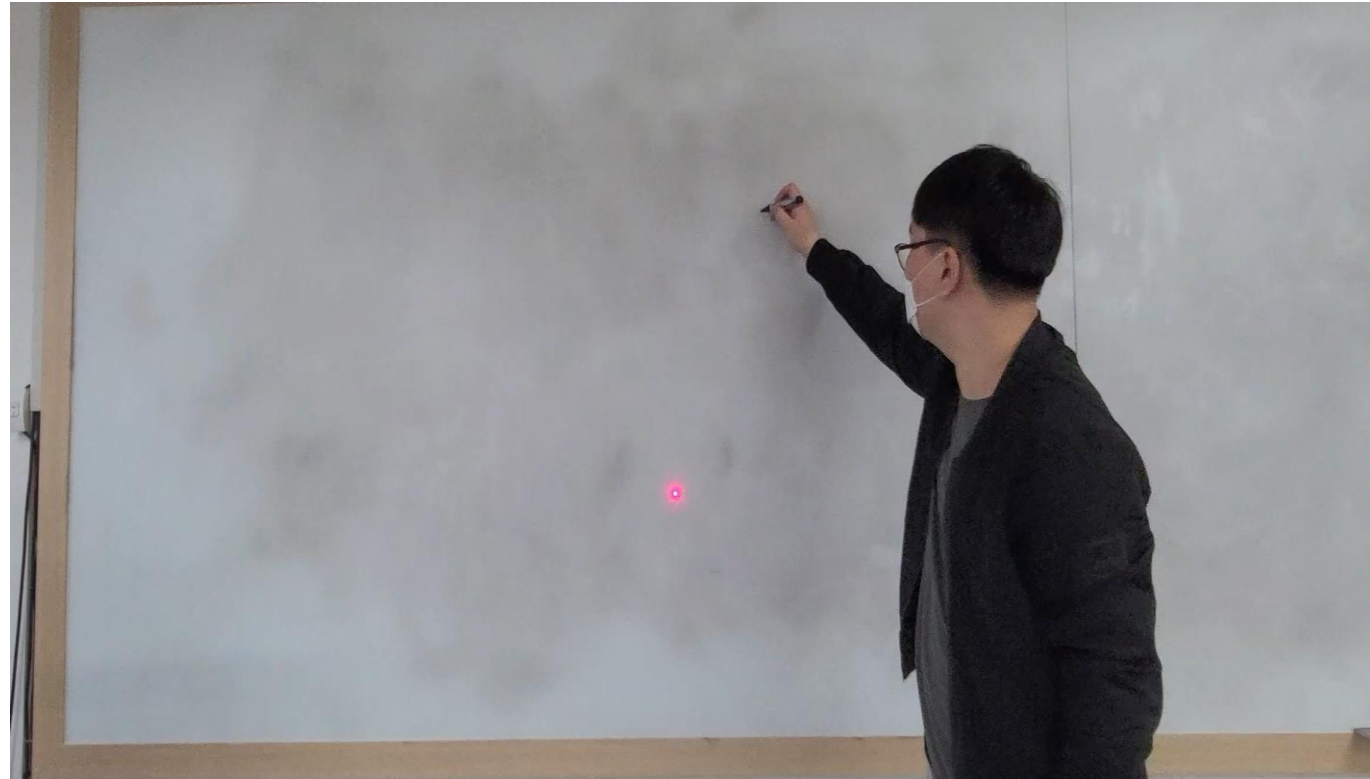
Avr



Avr



$K_p = 0.015$



Q & A