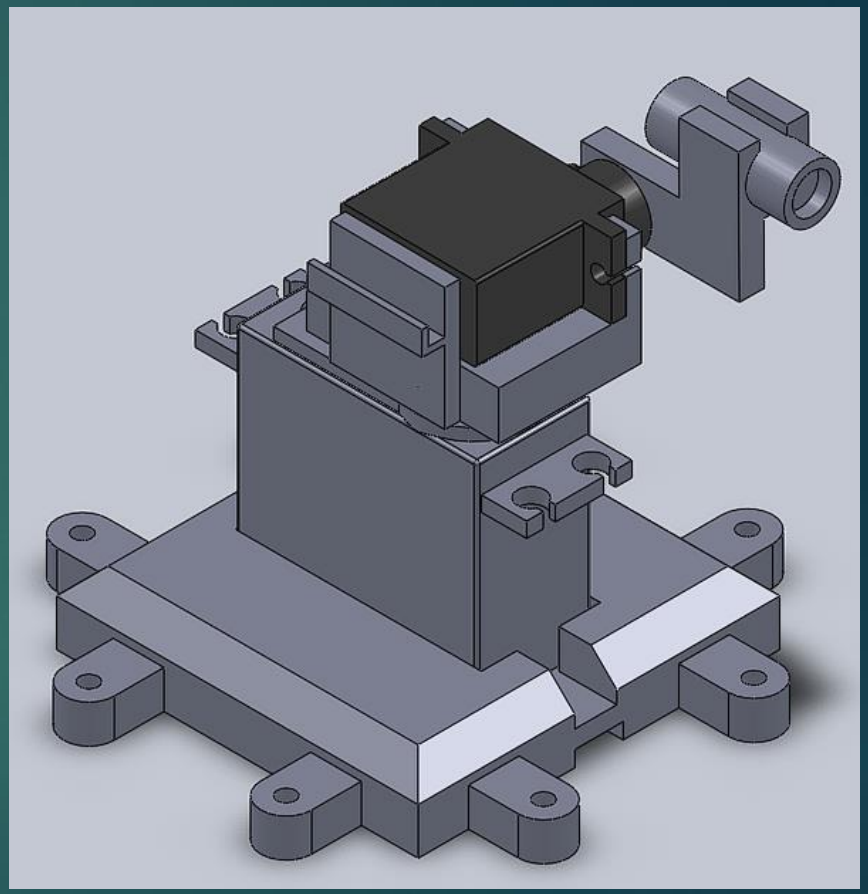
1조 로봇공학응용 PT

1658002 강필구 (H/W 33.33%)
1658006 문재영 (S/W 33.33%)
1658007 민주식 (F/W 33.33%)

개선방안 – H/W

- 포인터의 위치이동으로 무게중심을 중앙에 위치
- 빠른 속도로 움직여도 안정적으로 바닥에 접지
- 선정리를 강화하여 방해받지 않고 움직이게 함

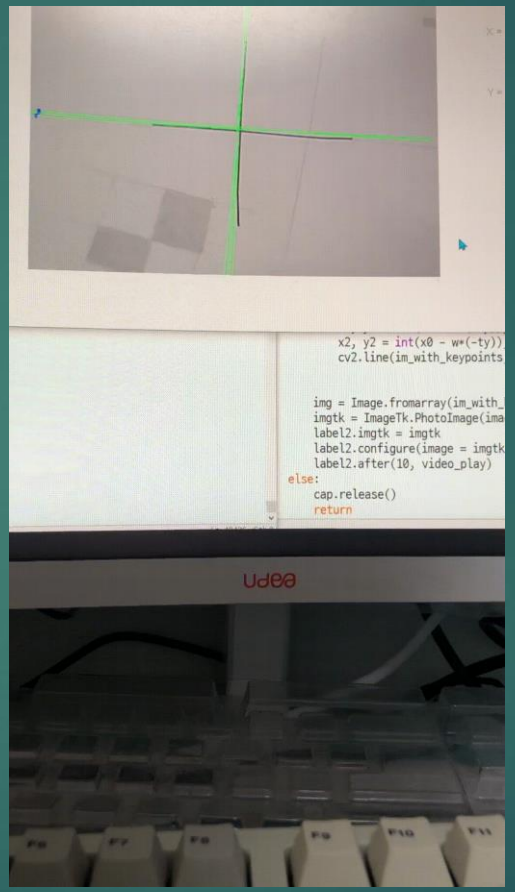


개선방안 – S/W

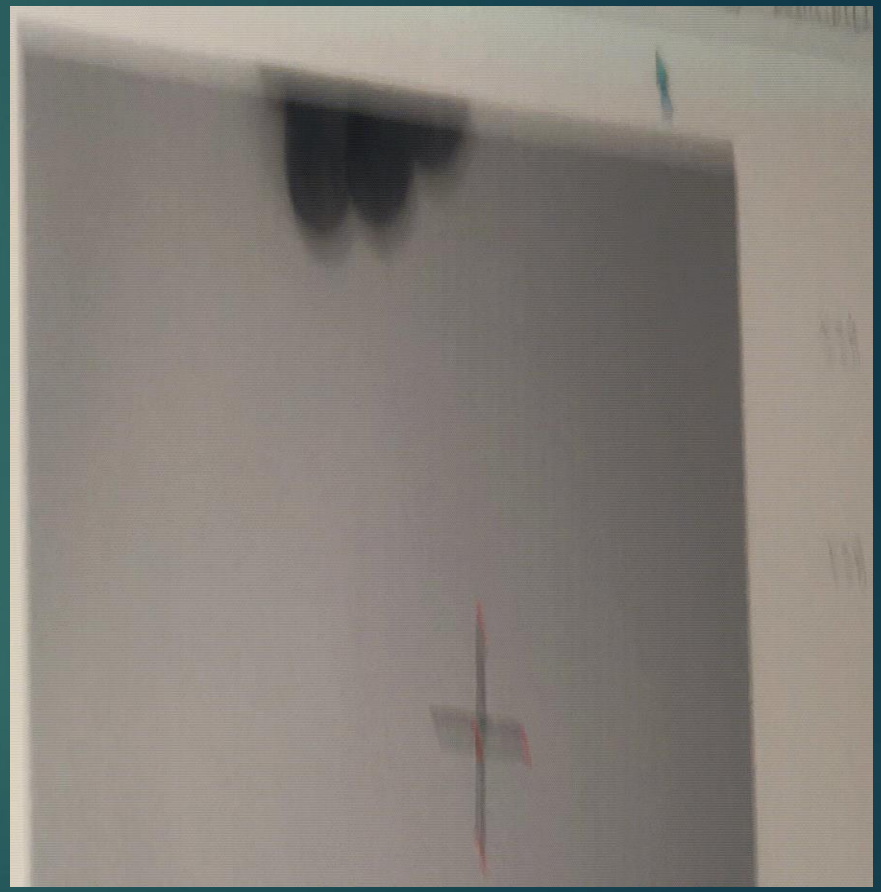
- 허프 변환으로 직선 구하기

  --> 코너 검출로 cross의 꼭짓점을 구하고 교점을 구함

- 프레임당 연산량을 감소시켜 FPS를 높일 예정



<허프 변환>

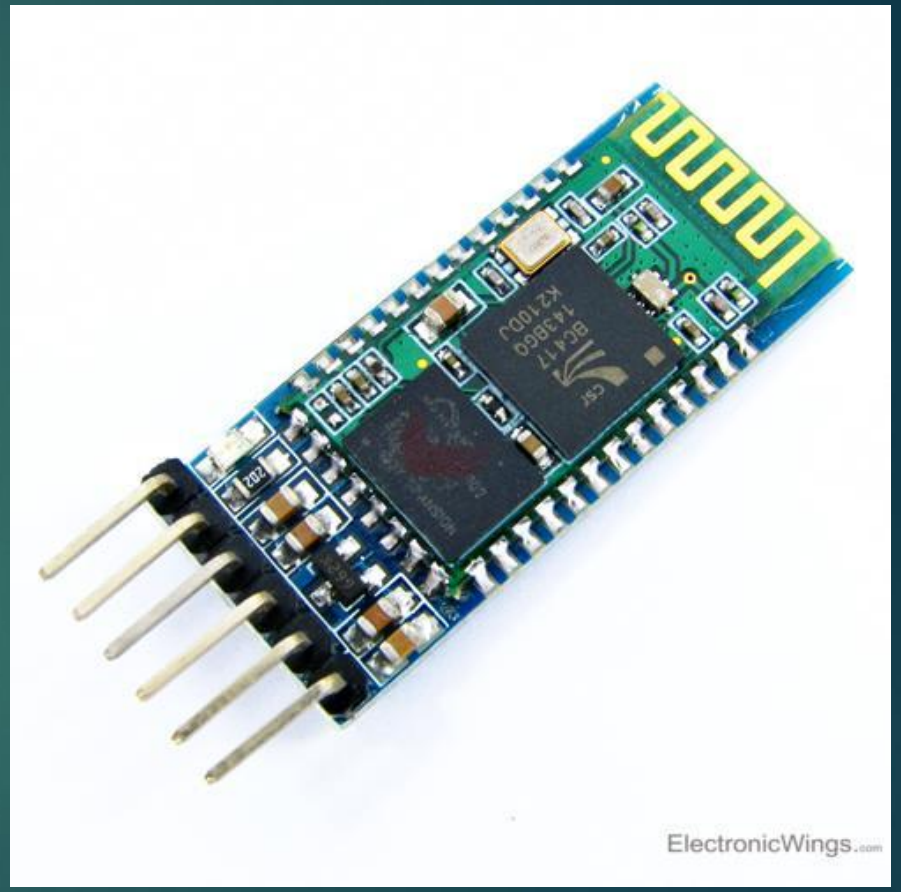


<코너 검출>

개선방안 – F/W

- 무선통신으로 업그레이드

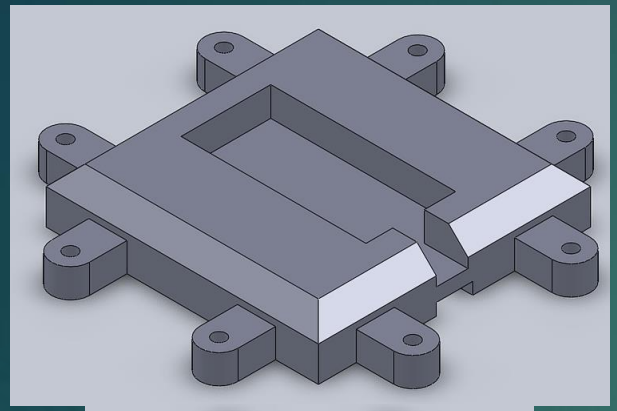
- AVR 내부에서 아스키값을
  소수점으로 변환하는 알고리즘

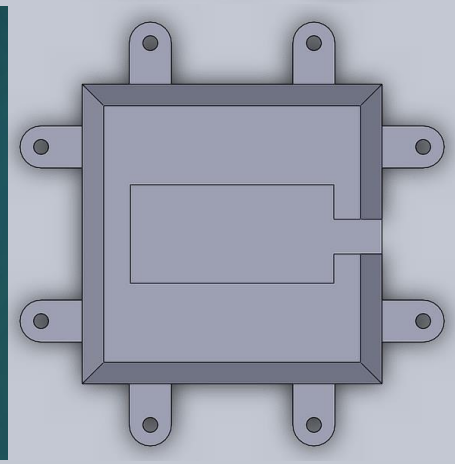


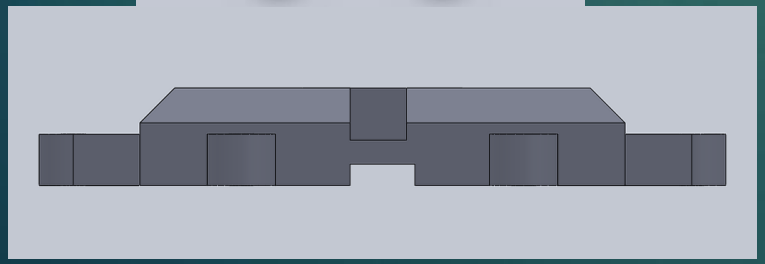
블루투스 통신 모듈 Hc-06

To Be Continued…

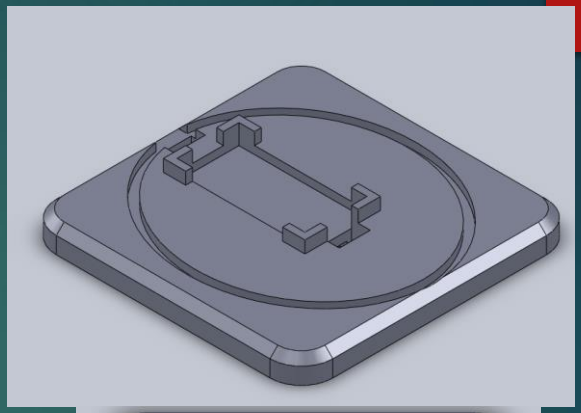
H/W - PIP

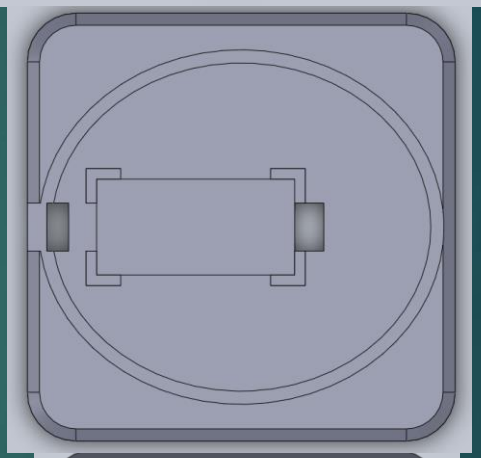


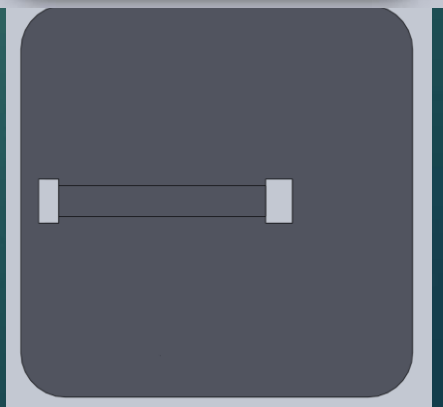




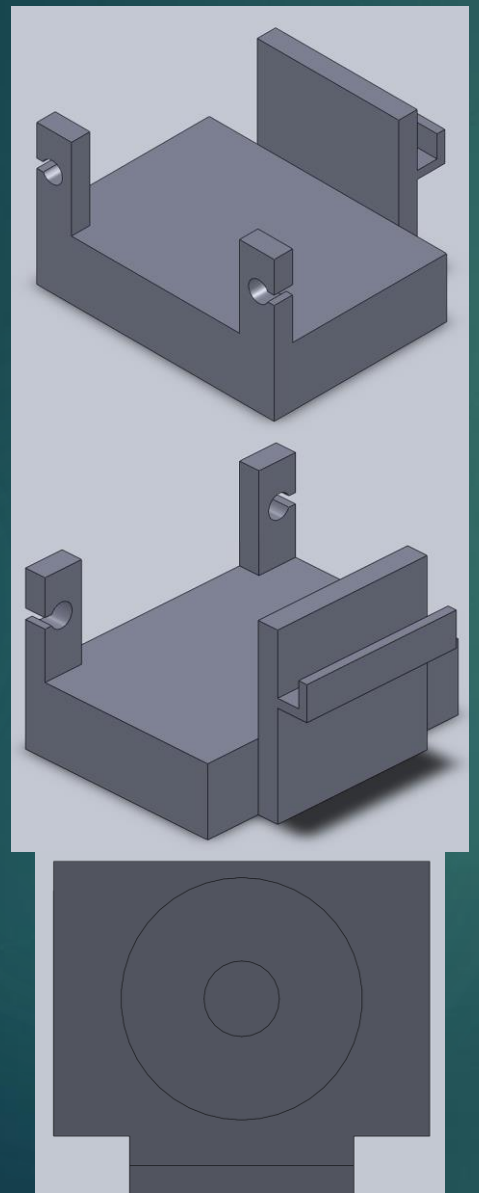
- 안정적인 접지
- 케이스 접합부
- 전선 배치 수월



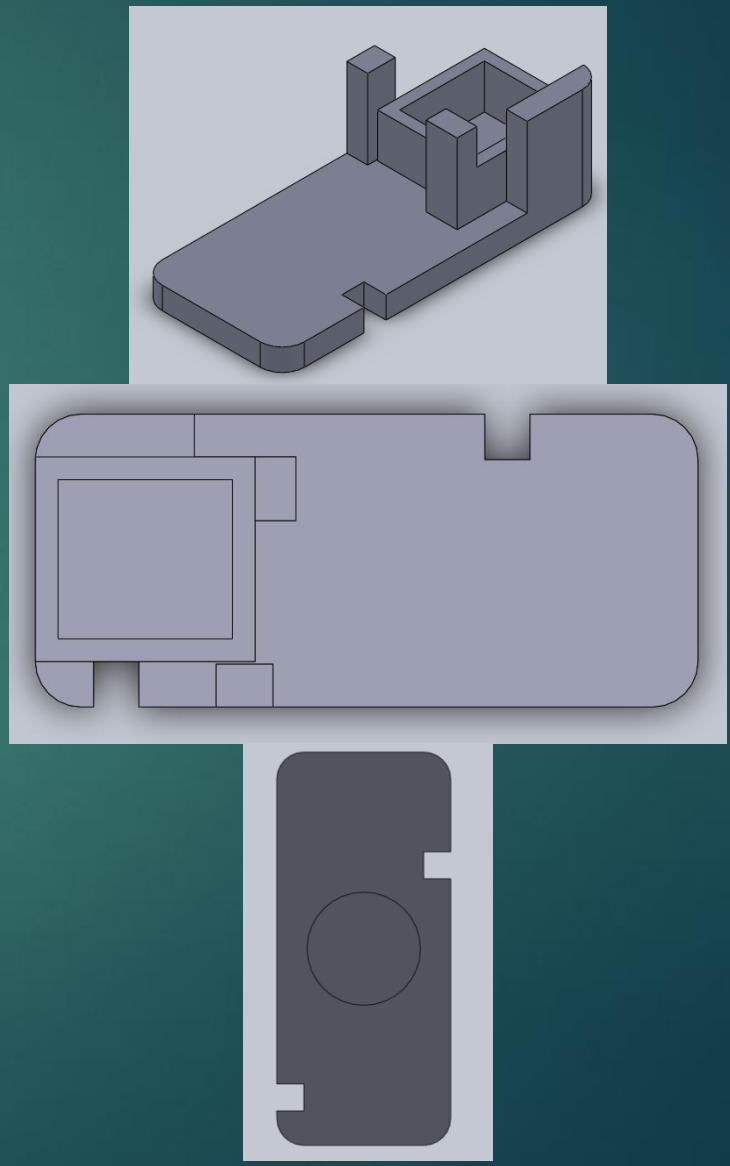




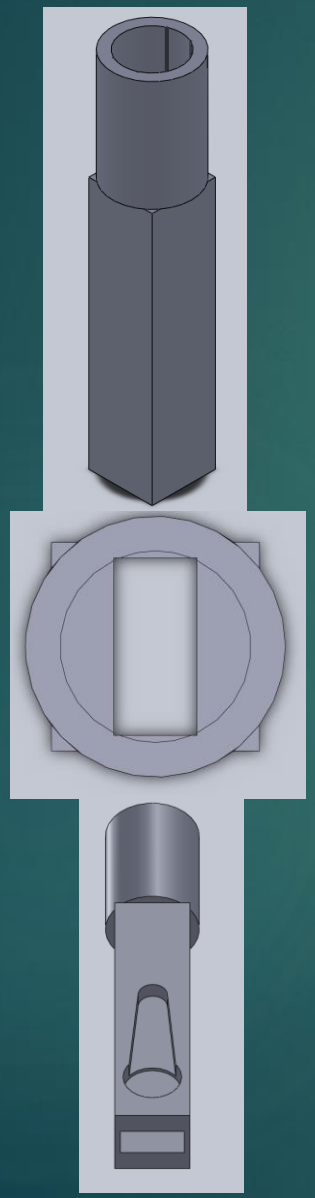
H/W - PIP



- 견고한 모터고정
- 가동 원점 조정
- 전선 배치 수월

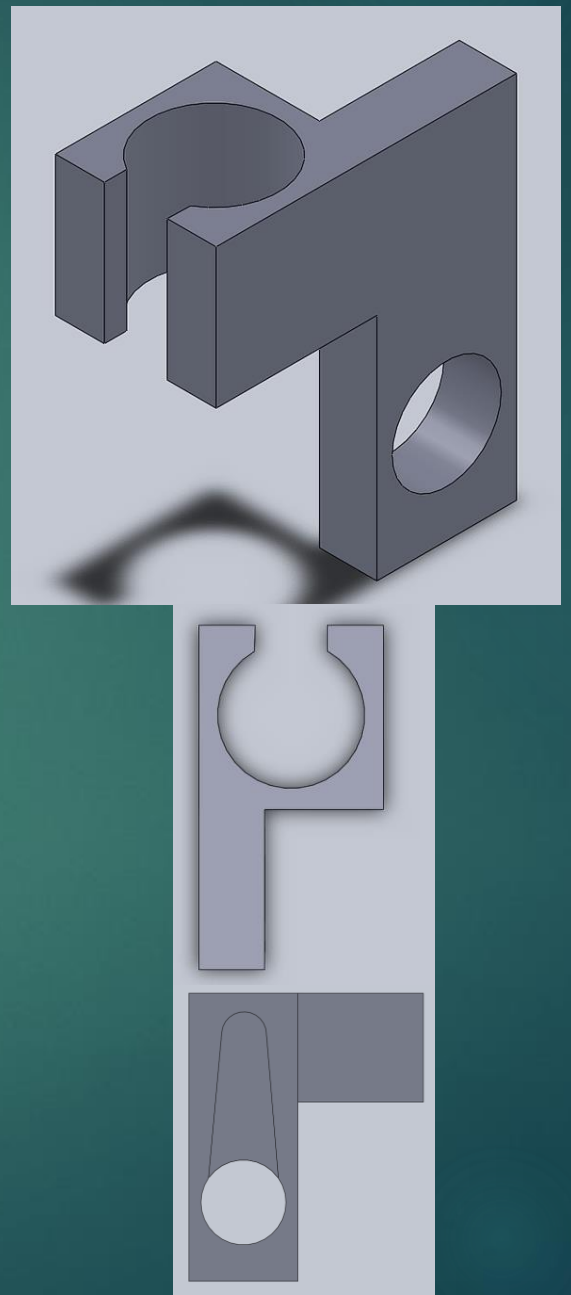


H/W - PIP

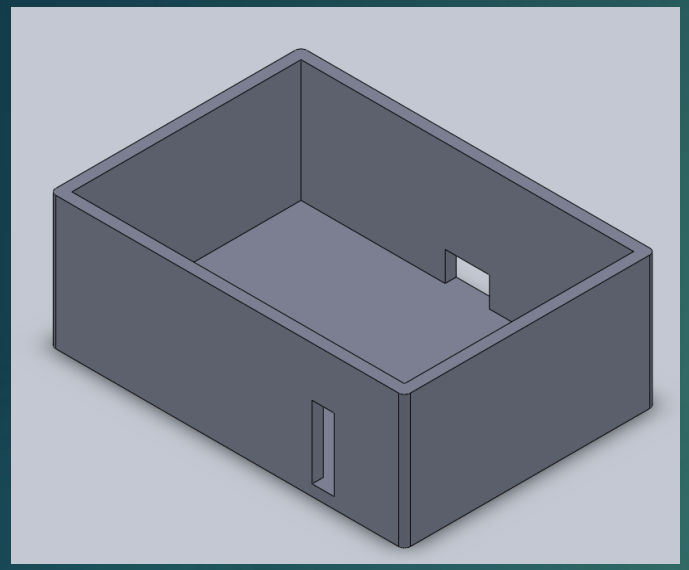


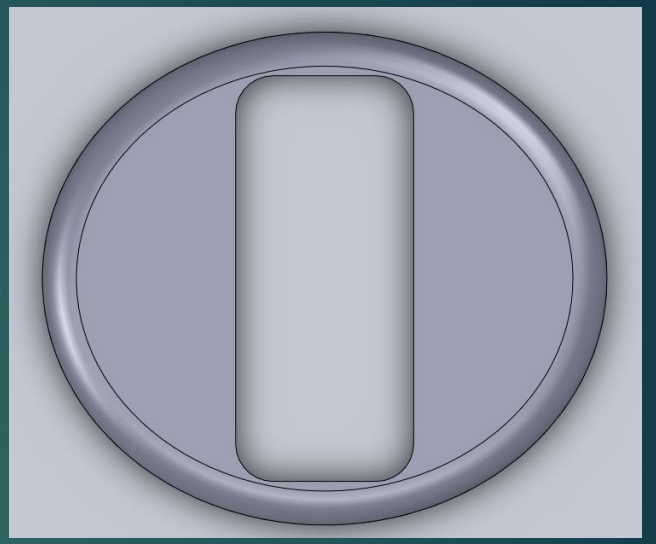
- 단단히 고정되는 레이저

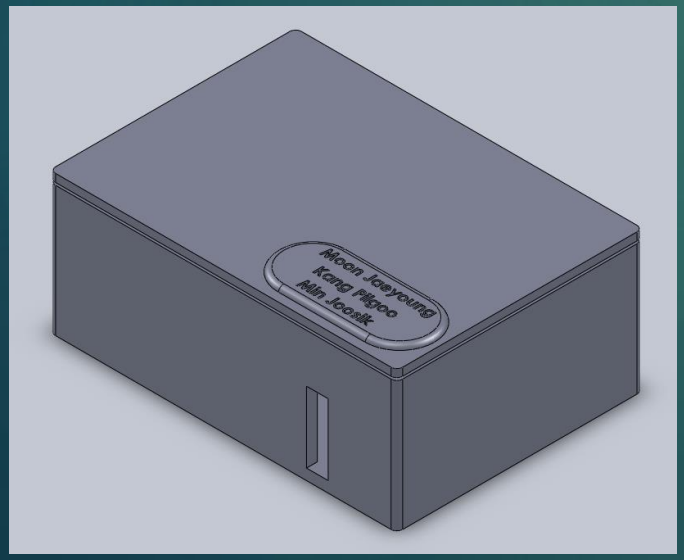
- 전선 배치 수월



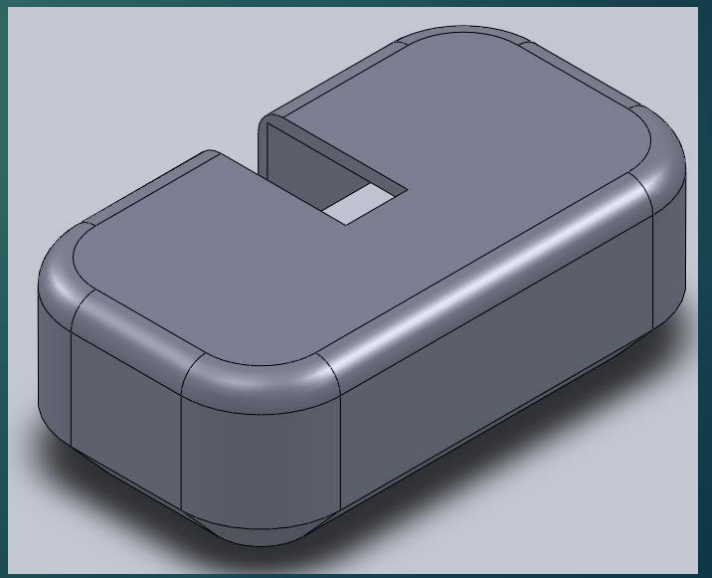
H/W - PIP



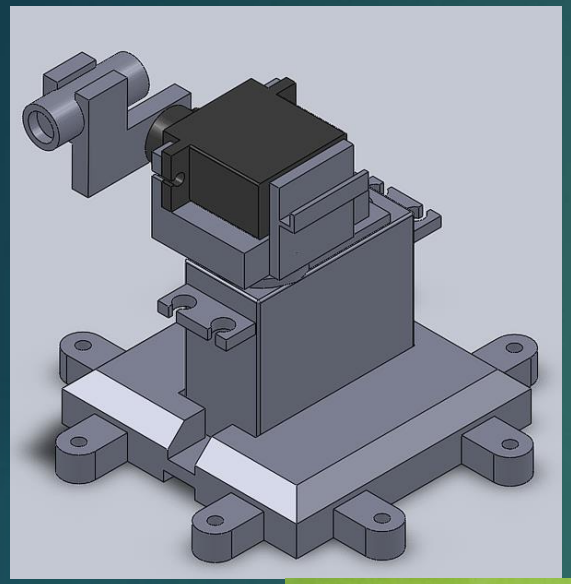


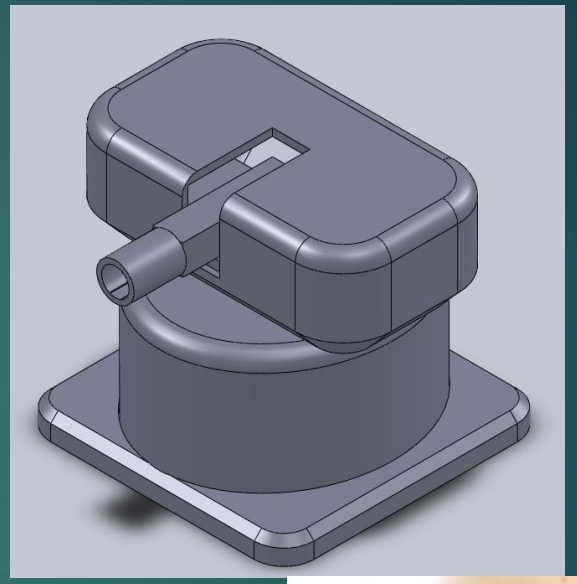


Control Box

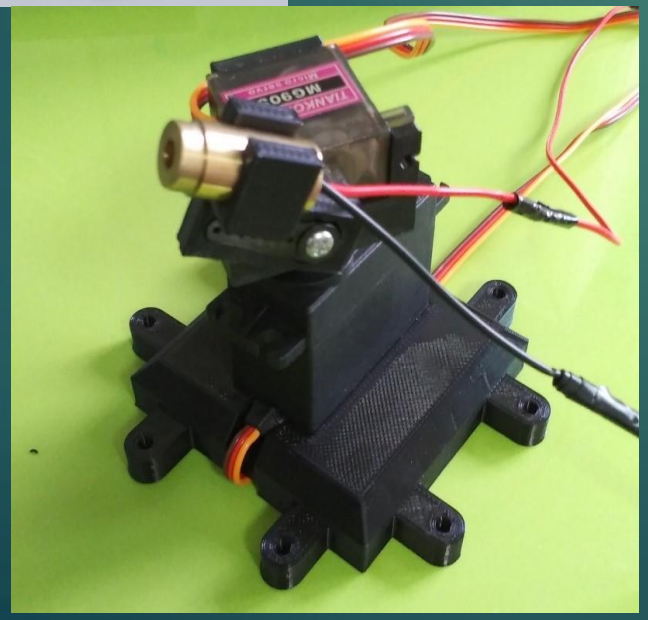


H/W - PIP





- 회전축 이동
- 케이블 정리
- 미관적 개선



S/W - PIP

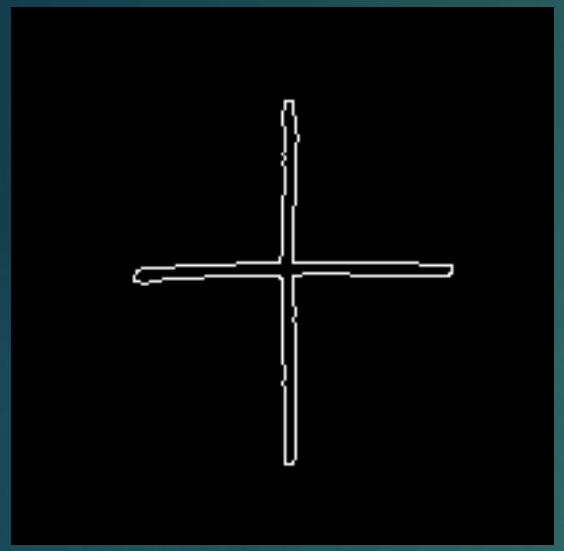
GAUSSIAN BLUR

BEFORE

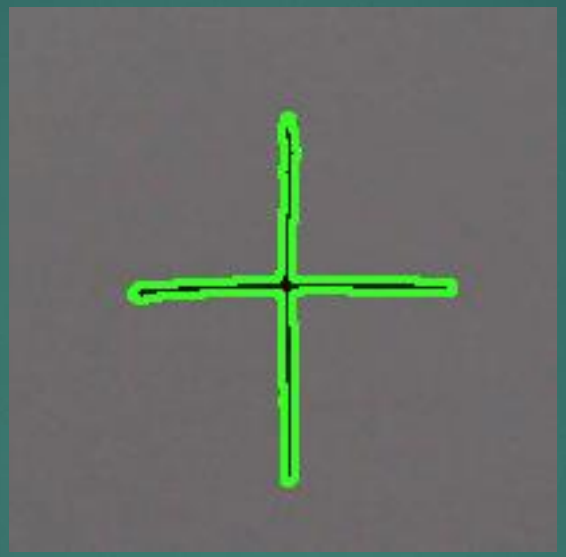
AFTER

노이즈 감소!

S/W - PIP



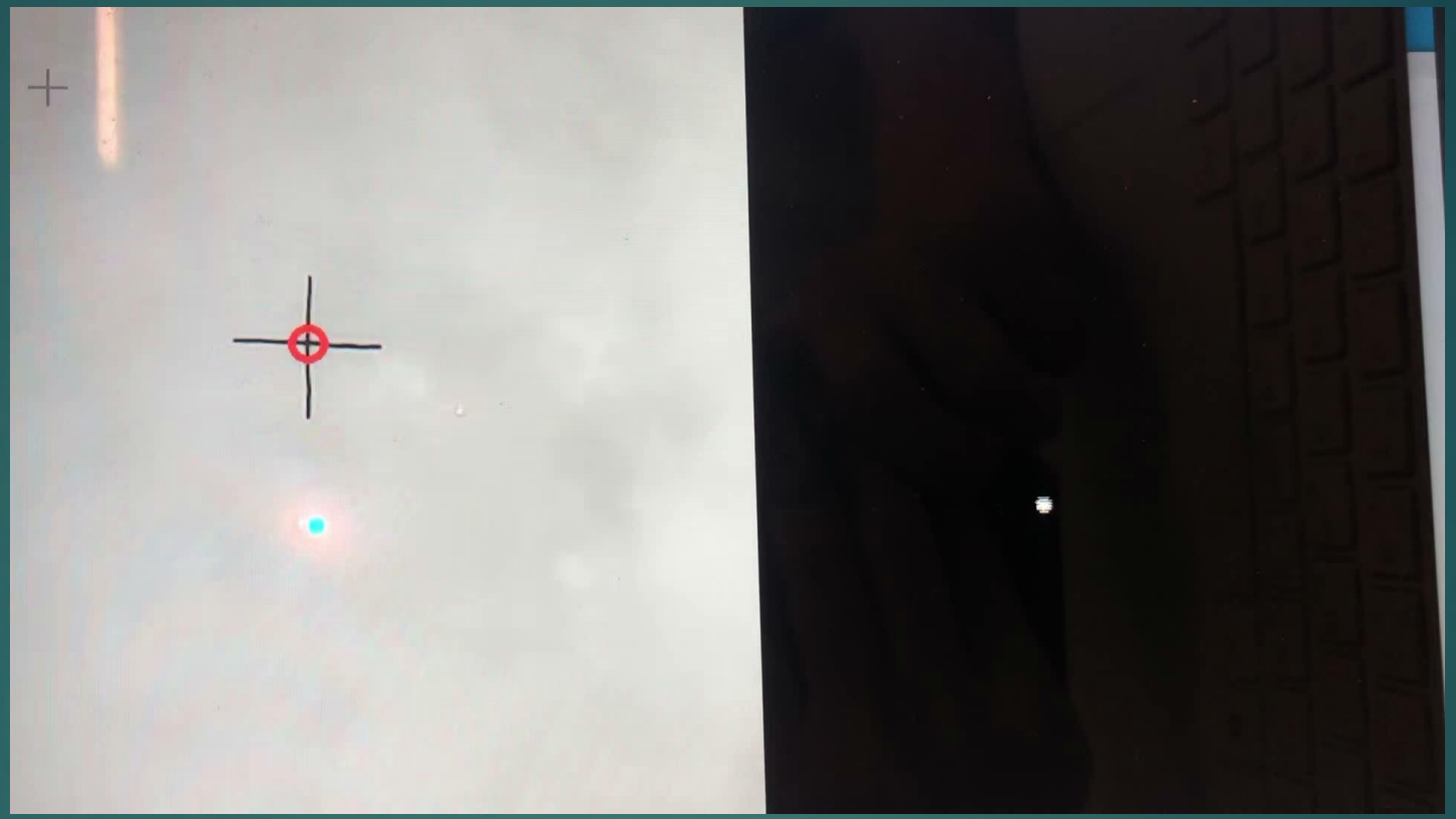
Edge



Contour

- **contour의 좌표를 받아서 4개의 좌표를 얻는다.**
- **4개의 점으로 십자가의 중심점을 찾는다.**

S/W - PIP

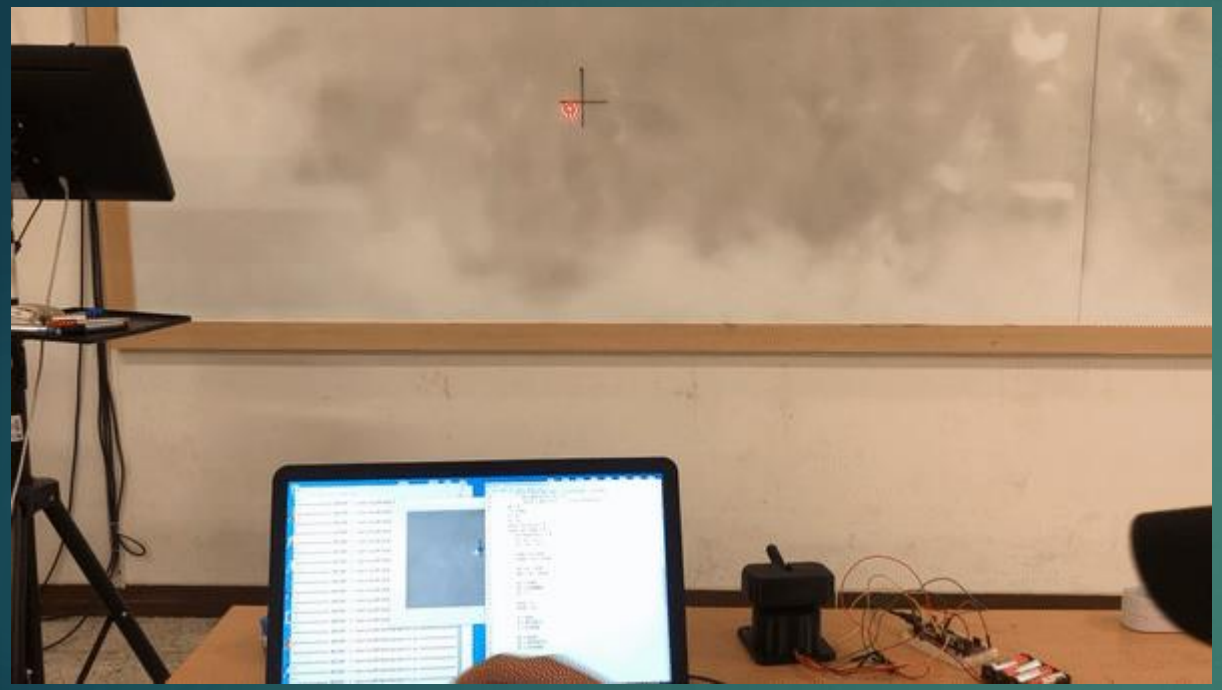


- blob-detect를 사용하여 잡으려 했지만 성능이 나쁨
- 레이저의 컬러정보를 이용하여 레이저를 검출함

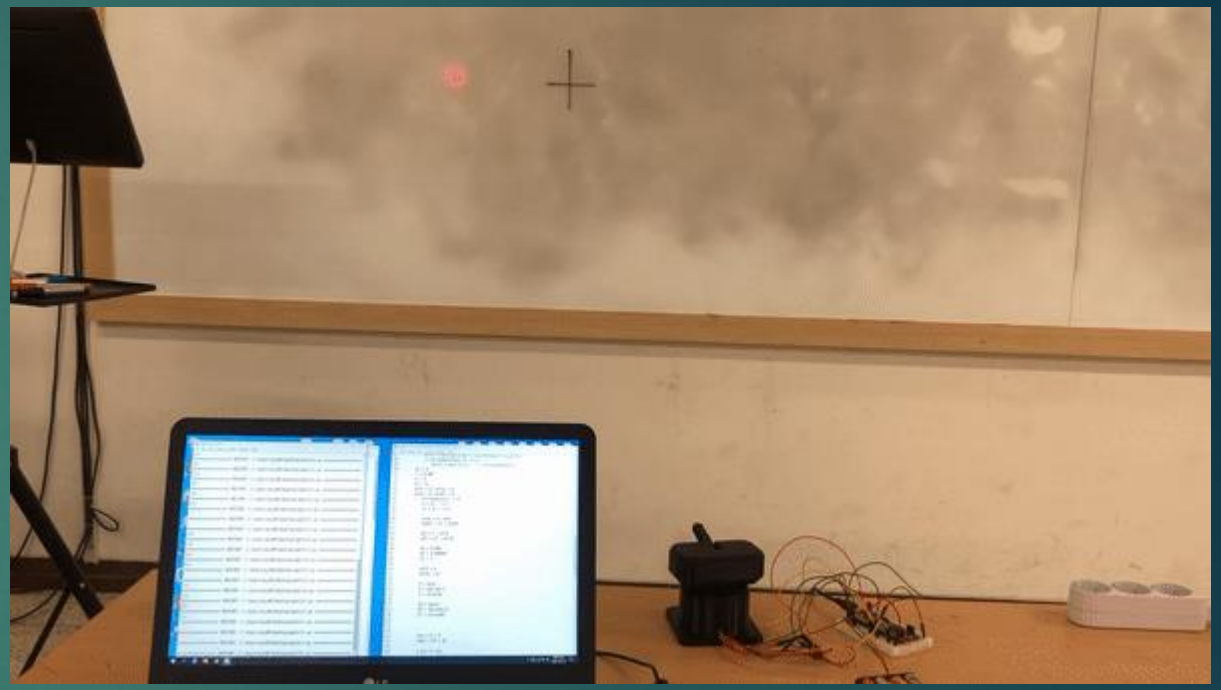
F/W - PIP

< PD제어를 적용하지 않았을 때 >

F/W - PIP

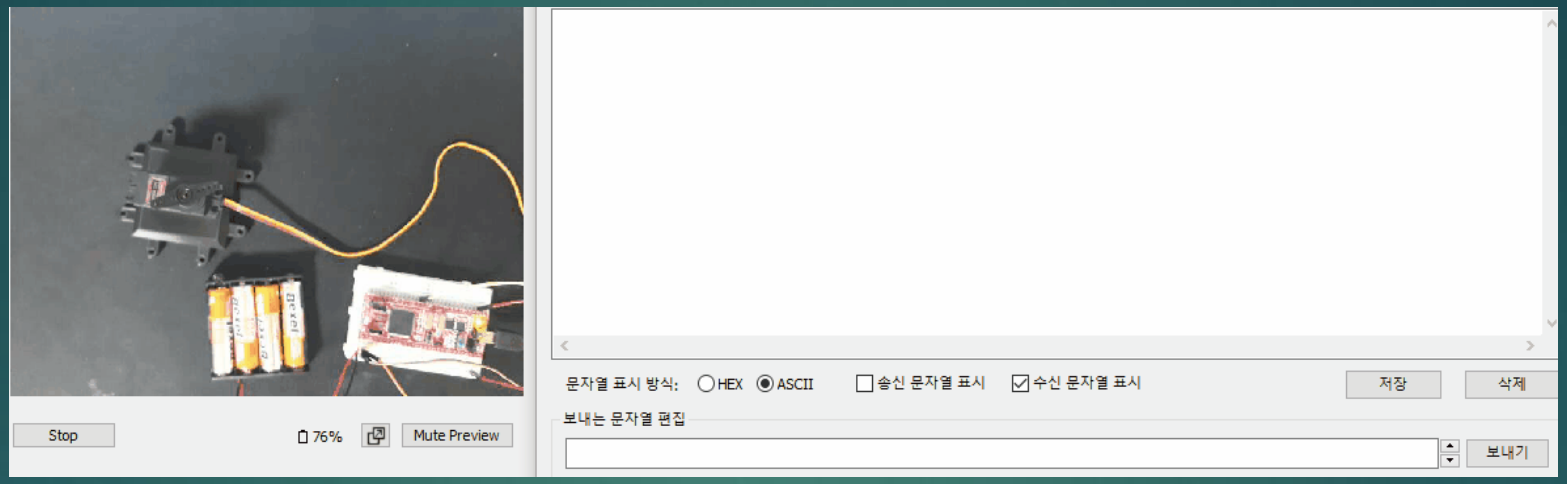


KP = 0.003
KD = 0.000008

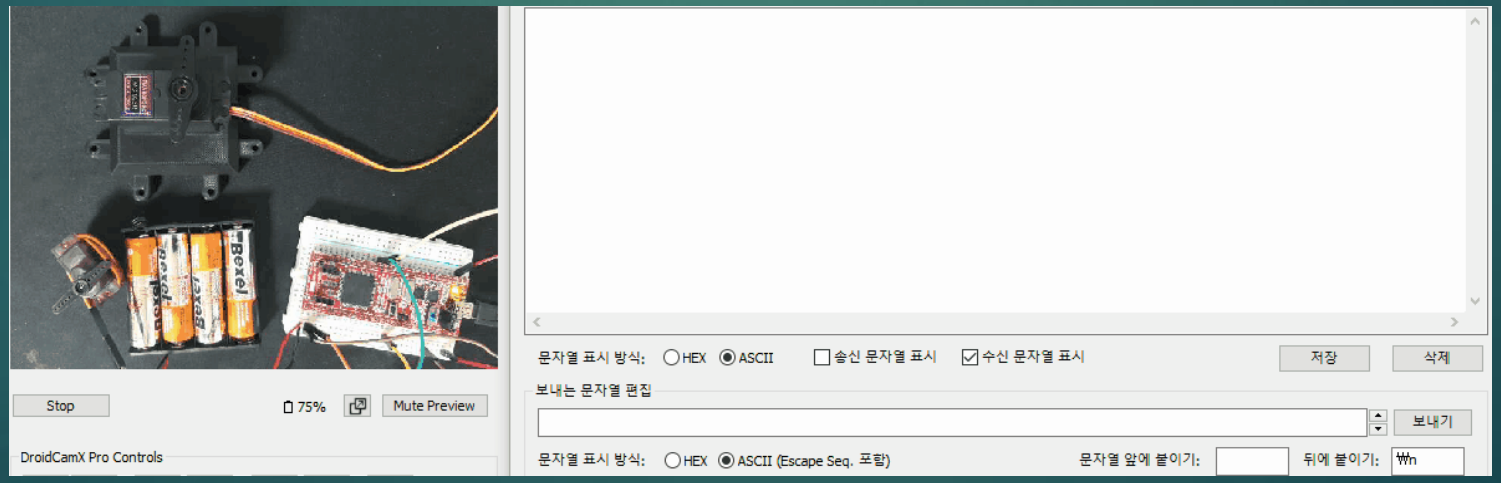


KP = 0.004
KD = 0.000001

F/W - PIP

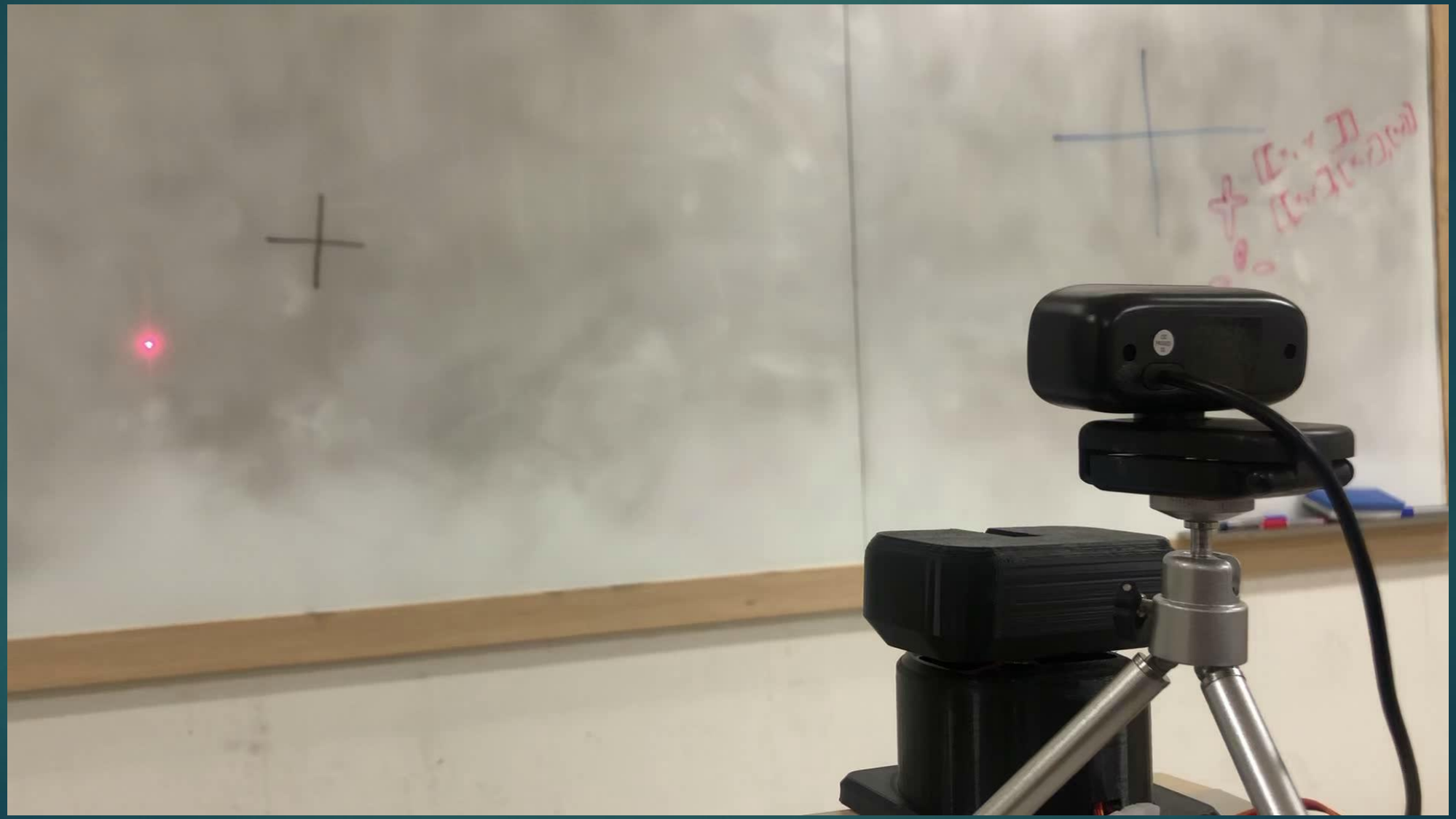


- 모터의 각도 값을 Float으로 입력하여 세밀한 제어가 가능



< 프로토콜 테스트>

Final Fusion



Clip Movie