

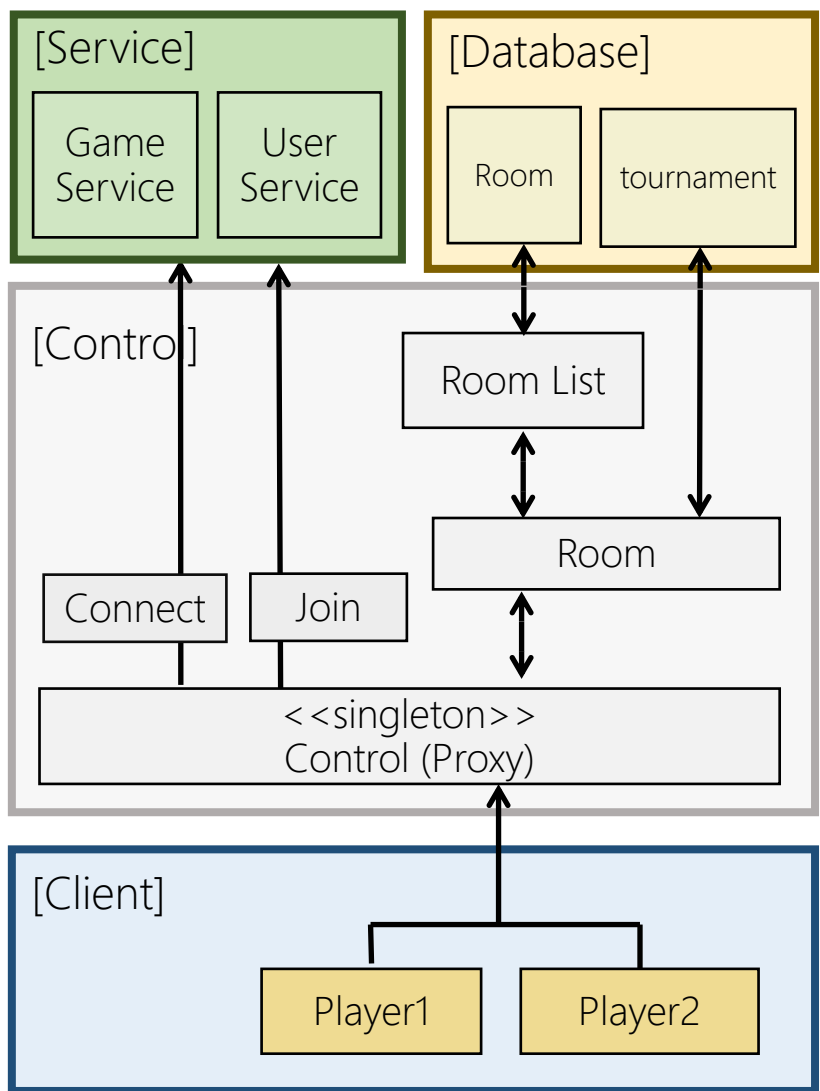
Portfolio

Yunju LEE

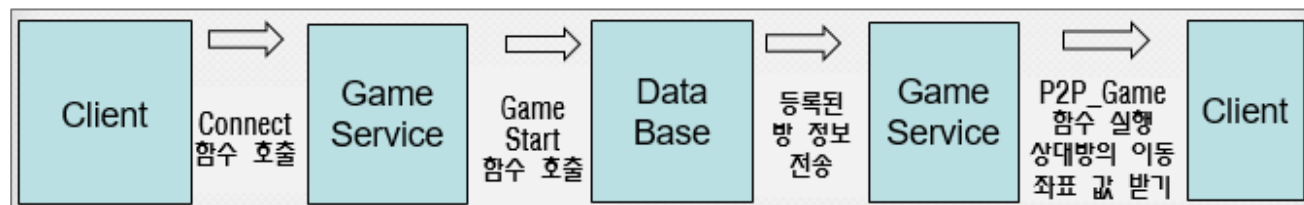
LIST

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- ▶ Neurophysiological Big Data Visualization Tool
- ▶ Waterworks Simulation
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- ▶ Robot Simulator
- ▶ Object classification with tactile sensor
- ▶ Point cloud Edit Program
- ▶ Object classification based on point cloud data from rgb-d camera
- ▶ Human Pose Estimation with restored occluded mask image

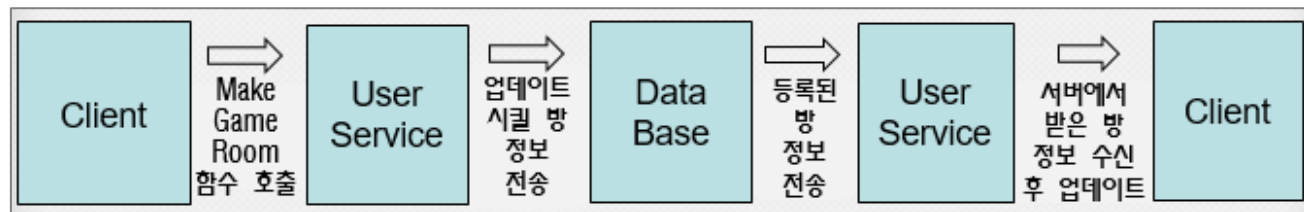
CHESS Game



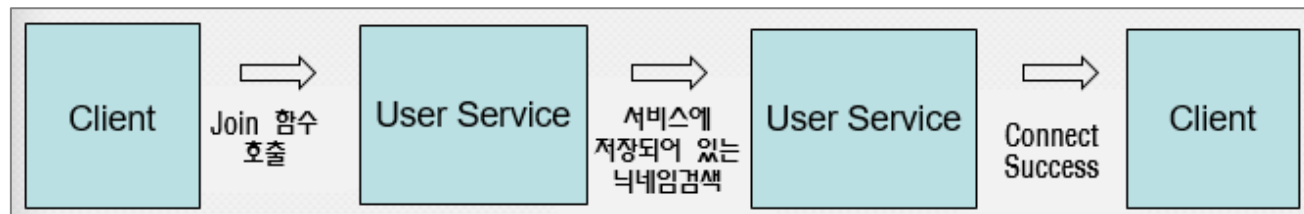
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<Server>

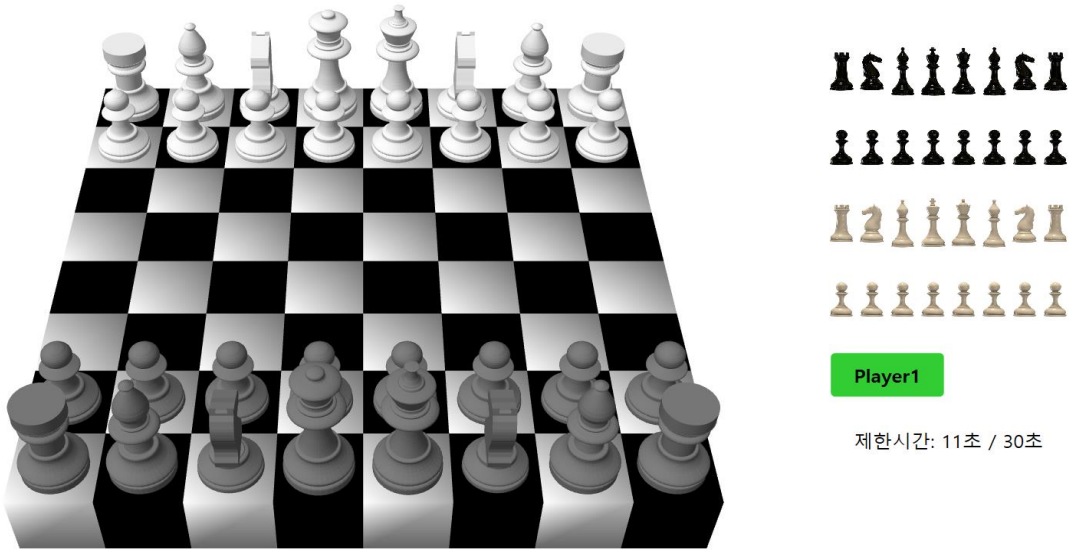


<Login>



CHESS Game

x

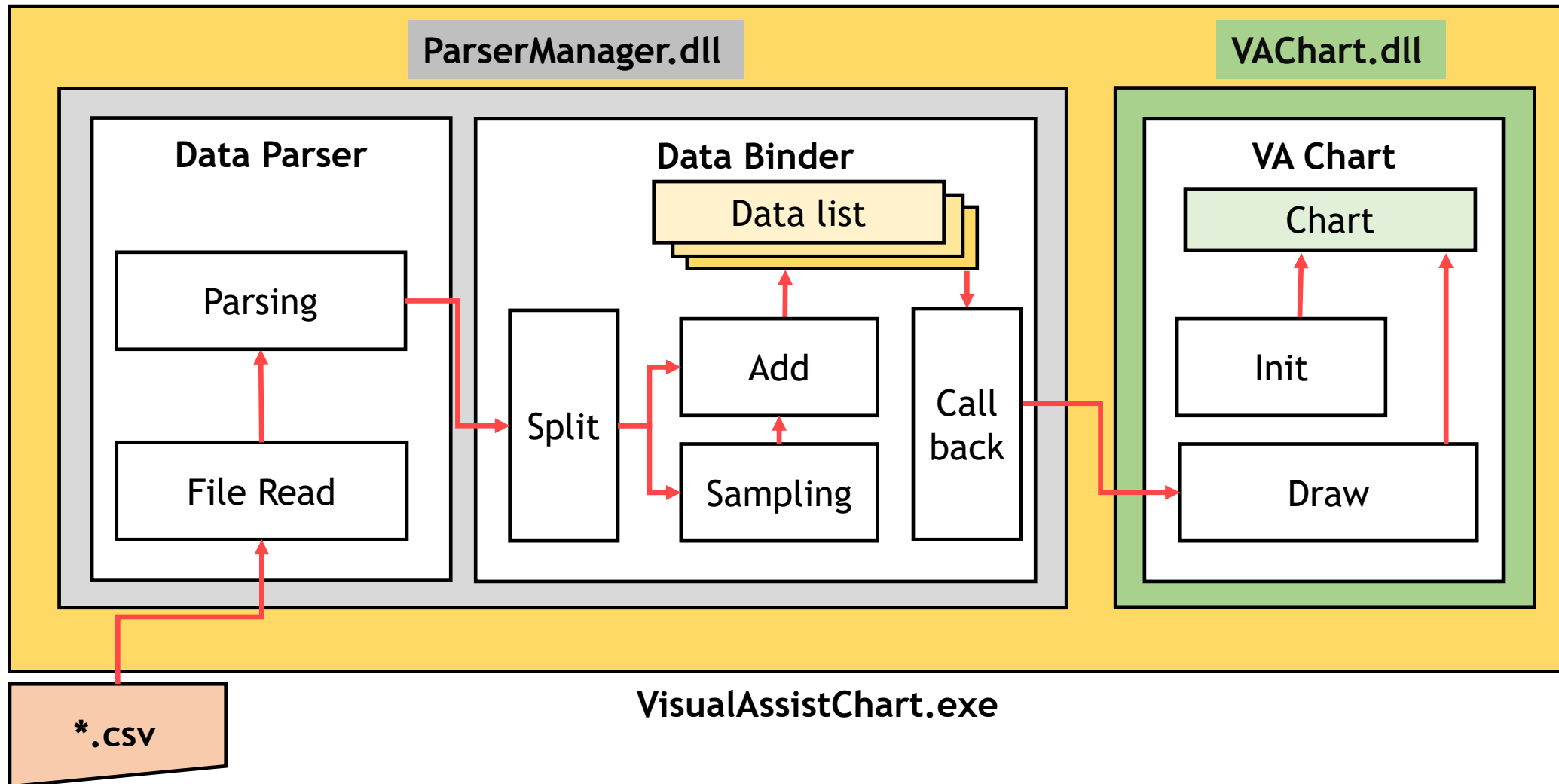


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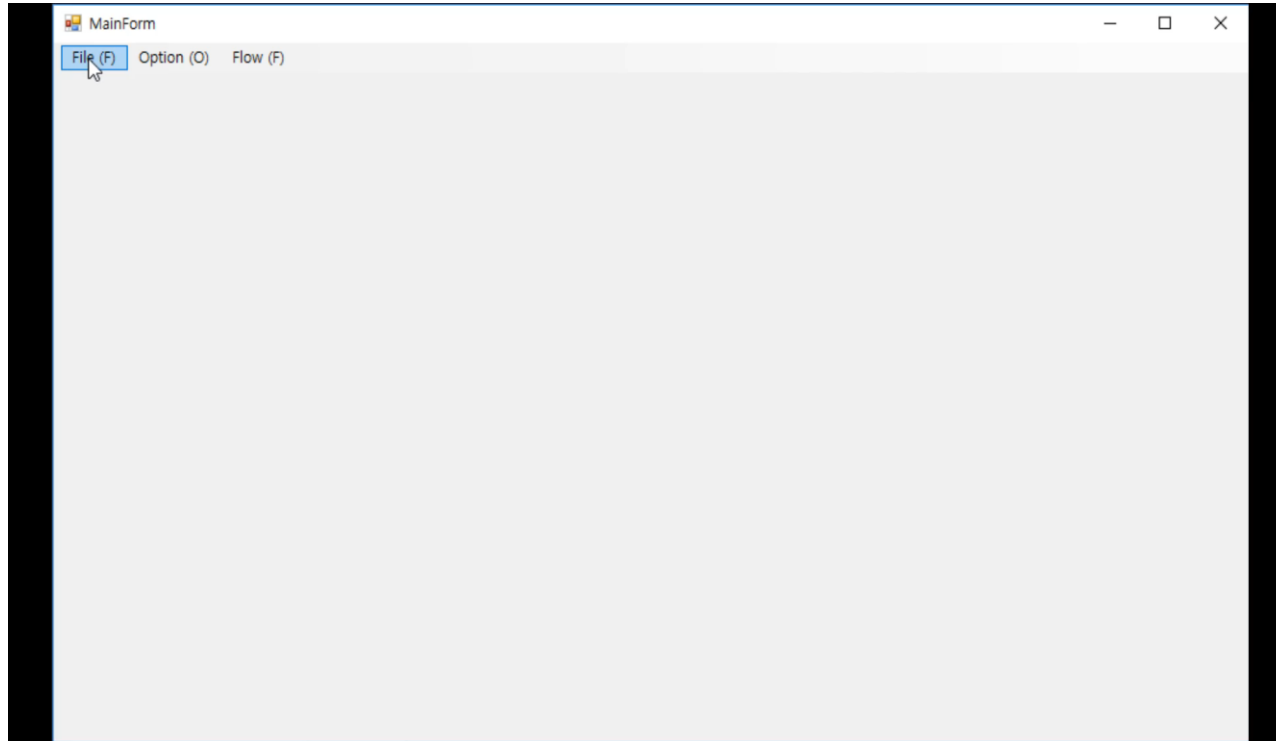
<Tournament>



Neurophysiological Big Data Visualization Tool



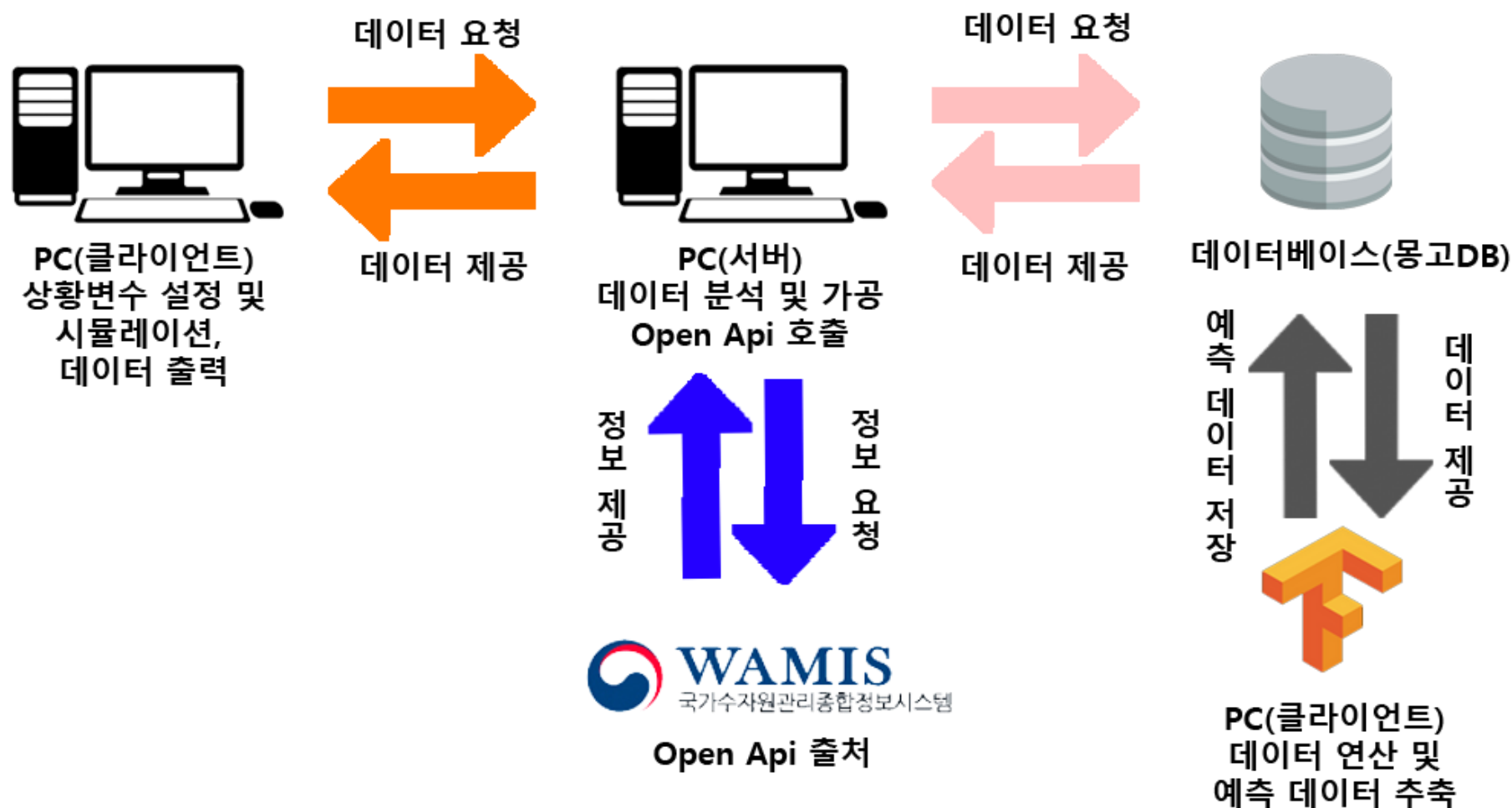
Neurophysiological Big Data Visualization Tool



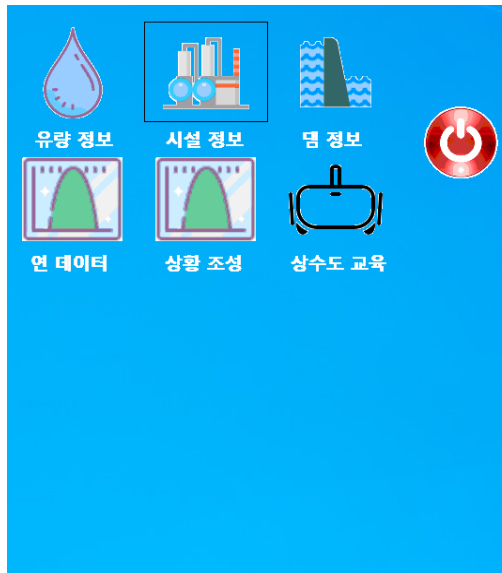
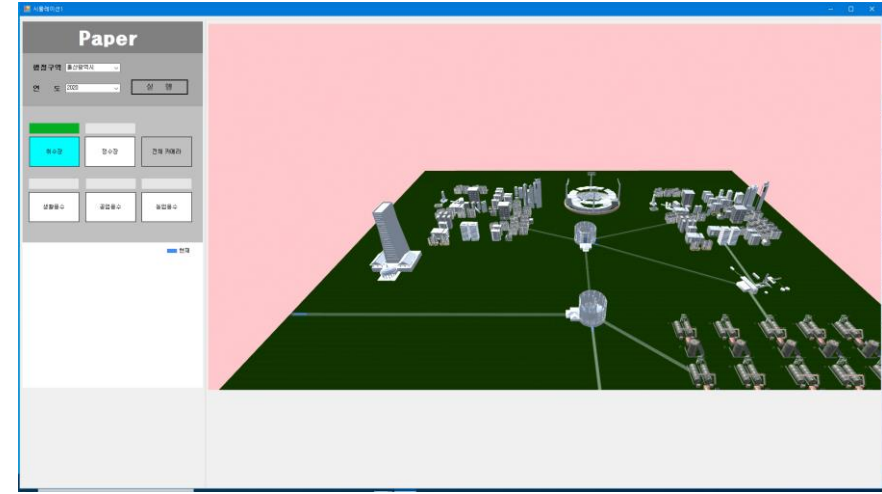
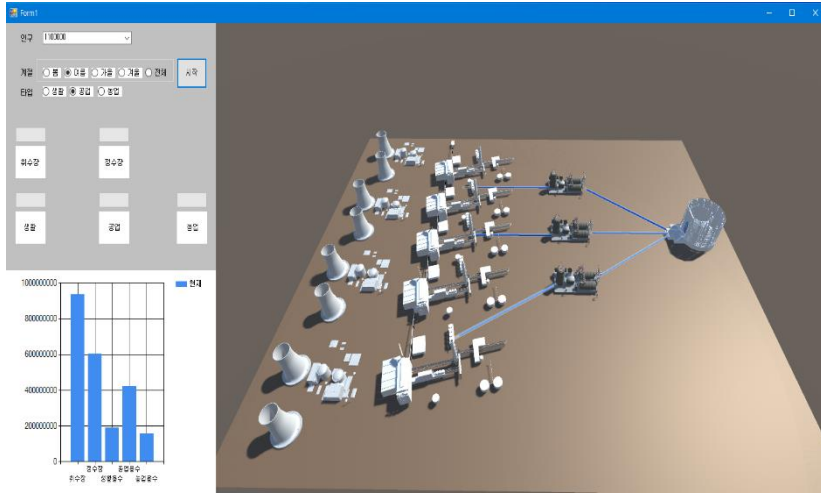
<Tool Options>

- ▶ Asynchronously parsing
- ▶ High-reaction speed
- ▶ Window sliding by using mouse dragging
- ▶ Scrolling
- ▶ Graph zoom, separate, integrate

Waterworks Simulation



Waterworks Simulation

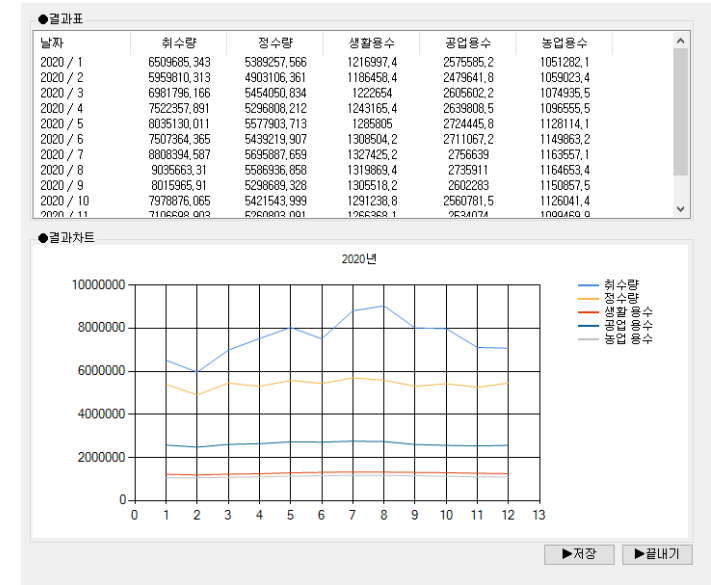


Paper

● 시설 선택
○ 취수장 ○ 정수장 ○ 가압장 ● 배수지 ● 조건 검색

배수지 정보

| 위치 | 후시설 | 전시설 | 비상시 급수일... | 시설명 | 시설용량 | 평균급수량 | 최대급수량 | 급수지역 |
|------------|------------|-----|------------|-----|-------|-------|---------------|------|
| 부산광역시 남... | 감만가압장 | 감만 | 3000 | 감만 | 1500 | 3000 | 감만1.2동, 대... | |
| 부산광역시 서... | 사상가설 | 사상 | 4000 | 사상 | 6000 | 6000 | 암남동, 감천동... | |
| 부산광역시 북... | 사상신설(개금) | 개금1 | 15000 | 개금1 | 26785 | 33557 | 동구, 부산진구... | |
| 부산광역시 북... | 사상신설(주례1) | 개금2 | 2500 | 개금2 | 1746 | 2846 | 개금1.2동, 일부... | |
| 부산광역시 연... | 덕천(신사직) | 거제 | 15000 | 거제 | 12526 | 18168 | 거제4.2동, 일부... | |
| 부산광역시 기... | 고촌가압장 | 고촌 | 2000 | 고촌 | 650 | 920 | 고촌역지개발... | |
| 부산광역시 서... | 사상신설(수... | 구덕 | 1000 | 구덕 | 400 | 1000 | 보수1동, 통대... | |
| 부산광역시 북... | 덕천(구포) | 구포2 | 2000 | 구포2 | 3400 | 4500 | 구포3동, 일부... | |
| 부산광역시 북... | 화명 | 금곡 | 9000 | 금곡 | 24000 | 27300 | 금곡, 화명2.3... | |
| 부산광역시 기... | 기장와동가압장 | 기장 | 10000 | 기장 | 1670 | 4210 | 명래산업단지... | |
| 부산광역시 서... | 사상가설(중... | 불마들 | 1000 | 불마들 | 904 | 1000 | 서대신동, 동대... | |
| 부산광역시 서... | 사상가설(남... | 남부민 | 2000 | 남부민 | 1700 | 2100 | 남부민2동, 전... | |
| 부산광역시 금... | 덕천(오류)구... | 남산 | 6000 | 남산 | 12797 | 20238 | 구서2, 청룡동... | |
| 부산광역시 강... | 강서공업용수... | 강서 | 17000 | 강서 | 0 | 0 | 녹산/신호동... | |
| 부산광역시 북... | 사상신설(신... | 당감 | 10000 | 당감 | 4467 | 6093 | 당감4, 부암1.3... | |
| 부산광역시 서... | 사상신설(수... | 대청 | 2500 | 대청 | 1000 | 2500 | 중구(남포동... | |
| 부산광역시 서... | 사상가설(괴정) | 대티 | 6500 | 대티 | 5600 | 6700 | 서대신1.2.3동... | |
| 부산광역시 서... | 사상가설(괴... | 대티2 | 5000 | 대티2 | 1200 | 1200 | 괴정2동, 서대... | |
| 부산광역시 북... | 덕천 | 만덕1 | 5000 | 만덕1 | 7200 | 7500 | 만덕2.3동, 일부... | |
| 부산광역시 북... | 덕천(만덕) | 만덕2 | 1100 | 만덕2 | 3800 | 4000 | 만덕동 | |
| 부산광역시 북... | 덕천(만덕3P) | 만덕5 | 3000 | 만덕5 | 3000 | 3500 | 만덕3역지개... | |
| 부산광역시 수... | 연산배수지 | 망미 | 2000 | 망미 | 2000 | 2000 | 망미1동, 연산3... | |
| 부산광역시 동... | 명장 | 명장 | 35000 | 명장 | 1000 | 50120 | 명장1.2, 안락1... | |

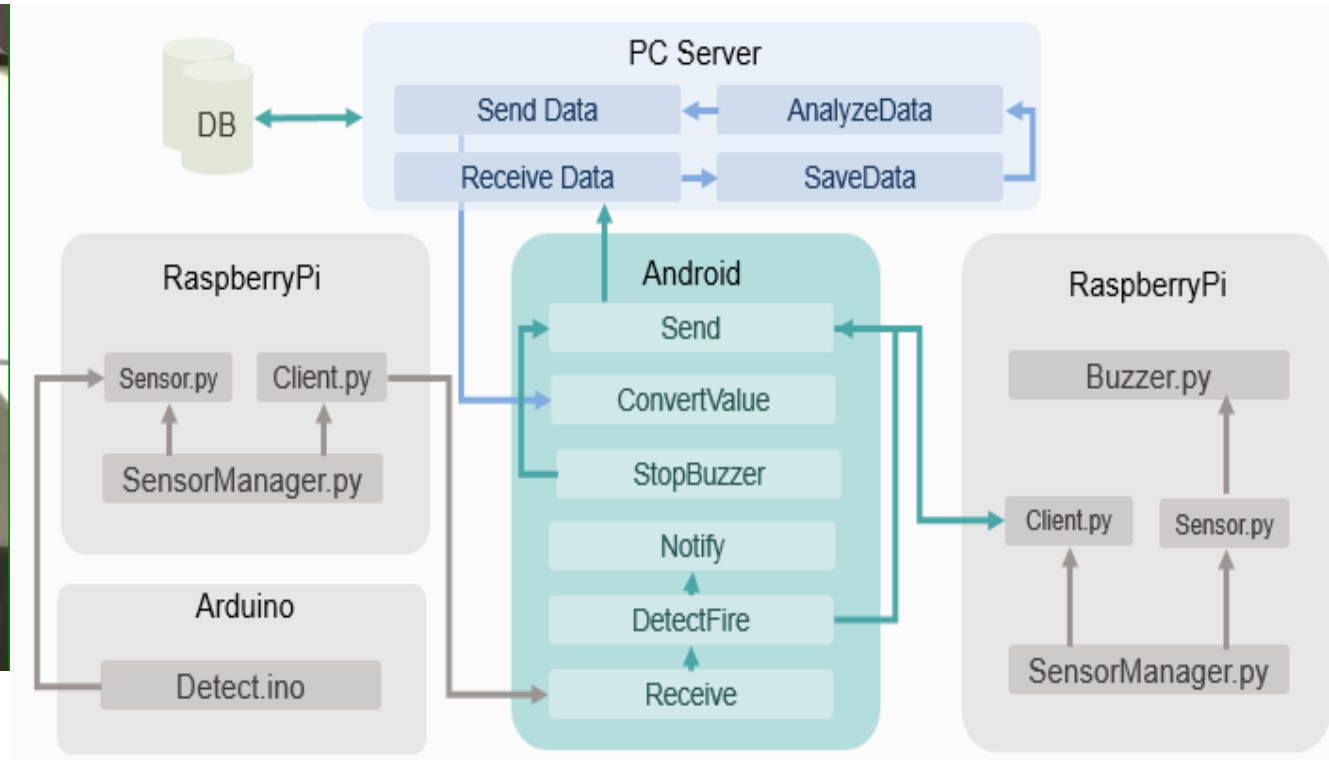


Home Alone

<Demo video>



<Architecture>



Robot Simulation

For Security,
Block Robot design

Robot Waist

axis1 ☒

Robot Arms

| | Left | Right | axis line |
|-------|----------------------|----------------------|-------------------------------------|
| axis1 | <input type="text"/> | <input type="text"/> | <input checked="" type="checkbox"/> |
| axis2 | <input type="text"/> | <input type="text"/> | <input checked="" type="checkbox"/> |
| axis3 | <input type="text"/> | <input type="text"/> | <input checked="" type="checkbox"/> |
| axis4 | <input type="text"/> | <input type="text"/> | <input type="checkbox"/> |
| axis5 | <input type="text"/> | <input type="text"/> | <input type="checkbox"/> |
| axis6 | <input type="text"/> | <input type="text"/> | <input type="checkbox"/> |
| axis7 | <input type="text"/> | <input type="text"/> | <input type="checkbox"/> |

View

☐ X1 ☐ X1.5 ☐ X2 ☒ Free Mode

Control Key

Vertical Rotation = Up, W, Down, S
Horizontal Rotation = Left, A, Right, D
Vertical camera move = Q(down), E(up)
Mouse wheel = Distance (when view mode is Free)

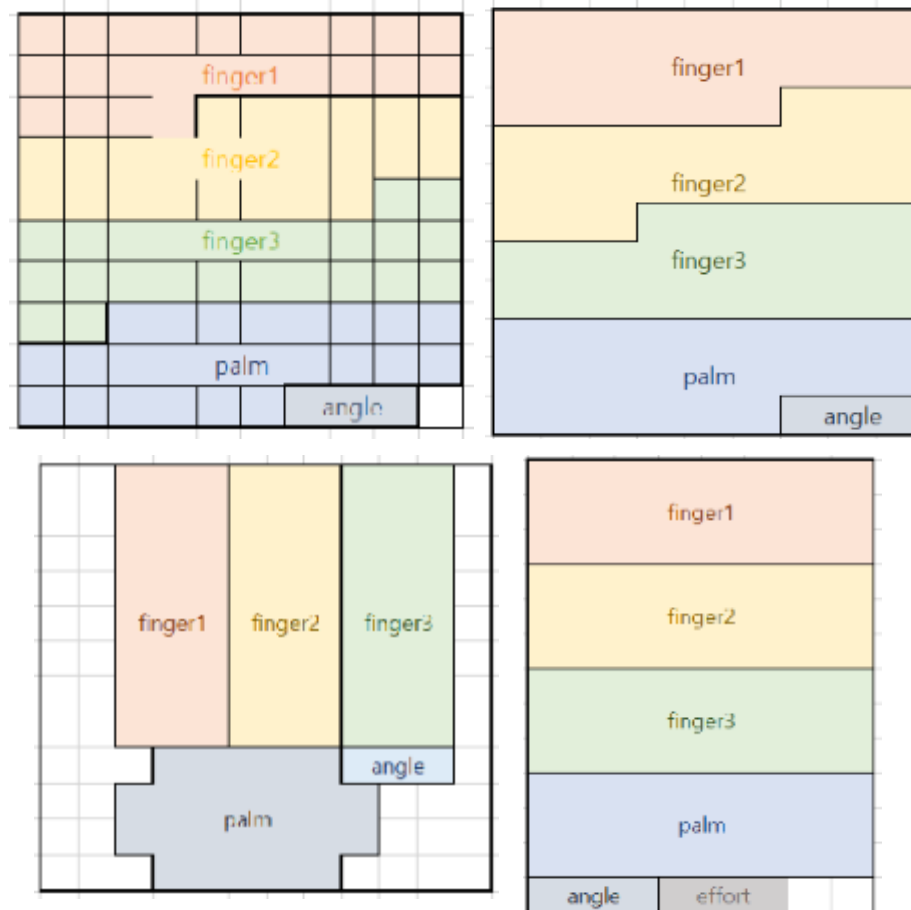
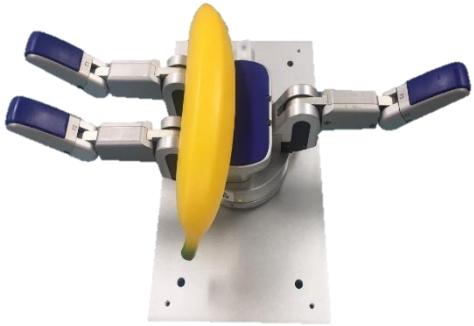
Amiro Controller

Status :

<Simulation functions>

- ▶ Robot Viewer
- ▶ Various view
- ▶ Set angle value
- ▶ Connect with robot controller

Object classification with tactile sensor



Object Grasp by Robot Hand



Collect Tactile Data (Tactile Image)



Feature Scaling (Pre-processing)

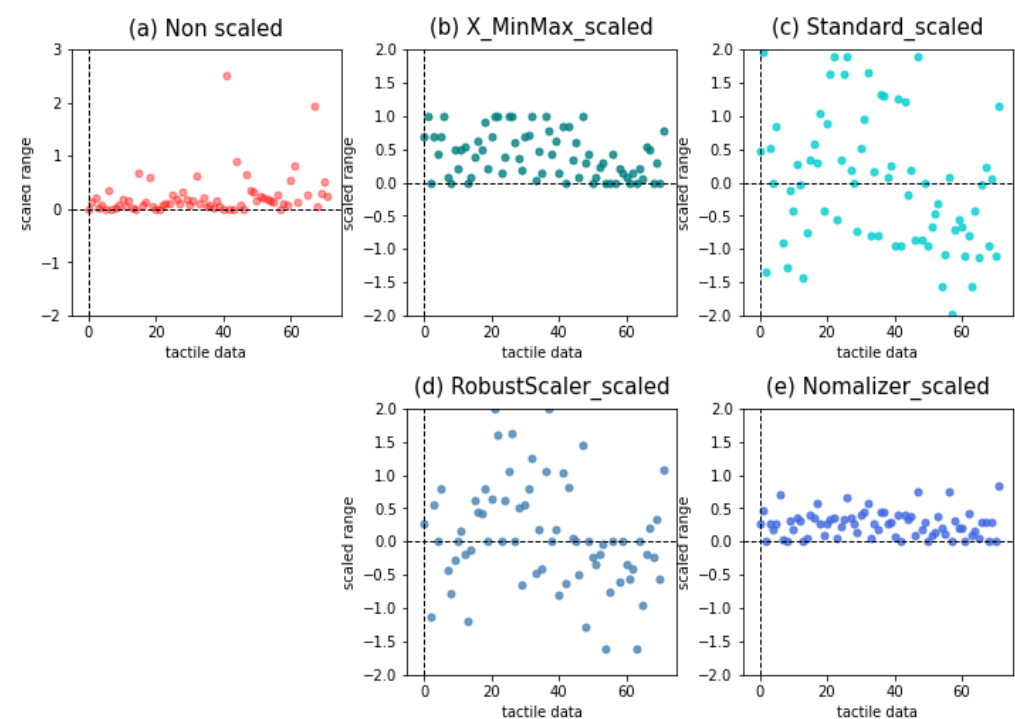


Learning & Model Making (CNN)



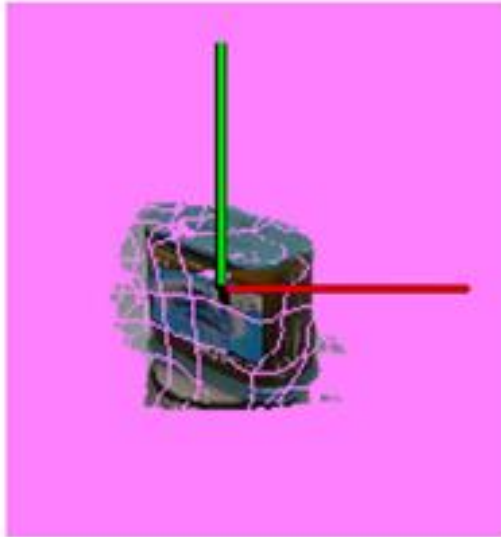
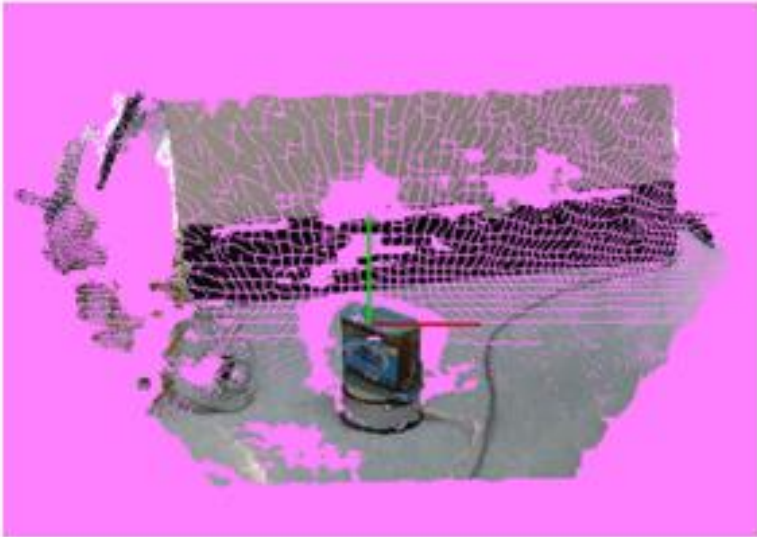
Object Classification

Object classification with tactile sensor



| | Finger | Hand | Angle | Effort |
|-----------|--------|--------|--------|--------|
| Standard | 91.17% | 83.25% | 87.08% | 82.08% |
| Min max | 91.17% | 85.08% | 90.17% | 86.75% |
| Robust | 81.92% | 82.83% | 83.67% | 87.25% |
| Normalize | 86.25% | 88.83% | 95.17% | 94.58% |

Point cloud Edit Program



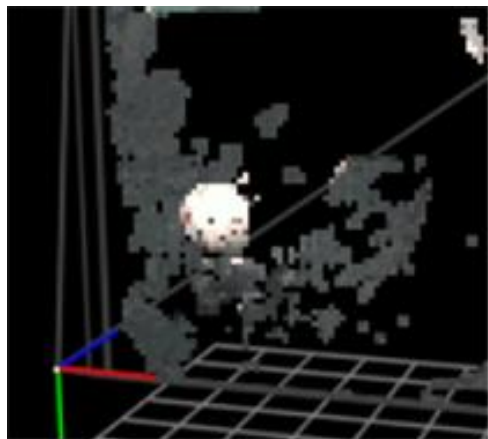
<Edit functions>

- ▶ .pcd / .ply file viewer
- ▶ File edit, cut data
- ▶ Object segmentation using kdtree

Object classification based on point cloud data from rgb-d camera



Object data capture



Original point cloud data

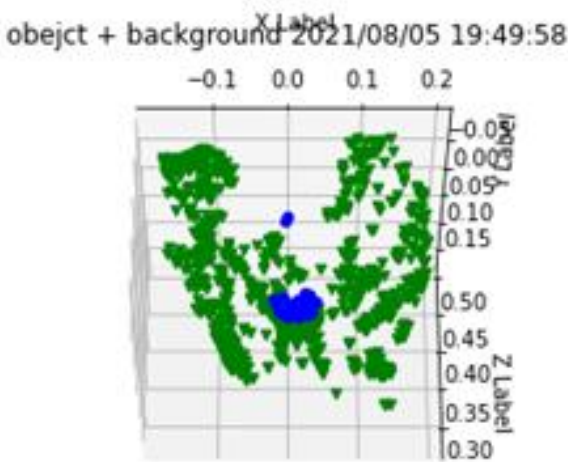
pred: tennis



Classification results

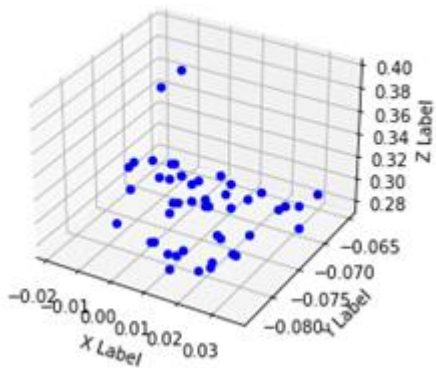


Used objects



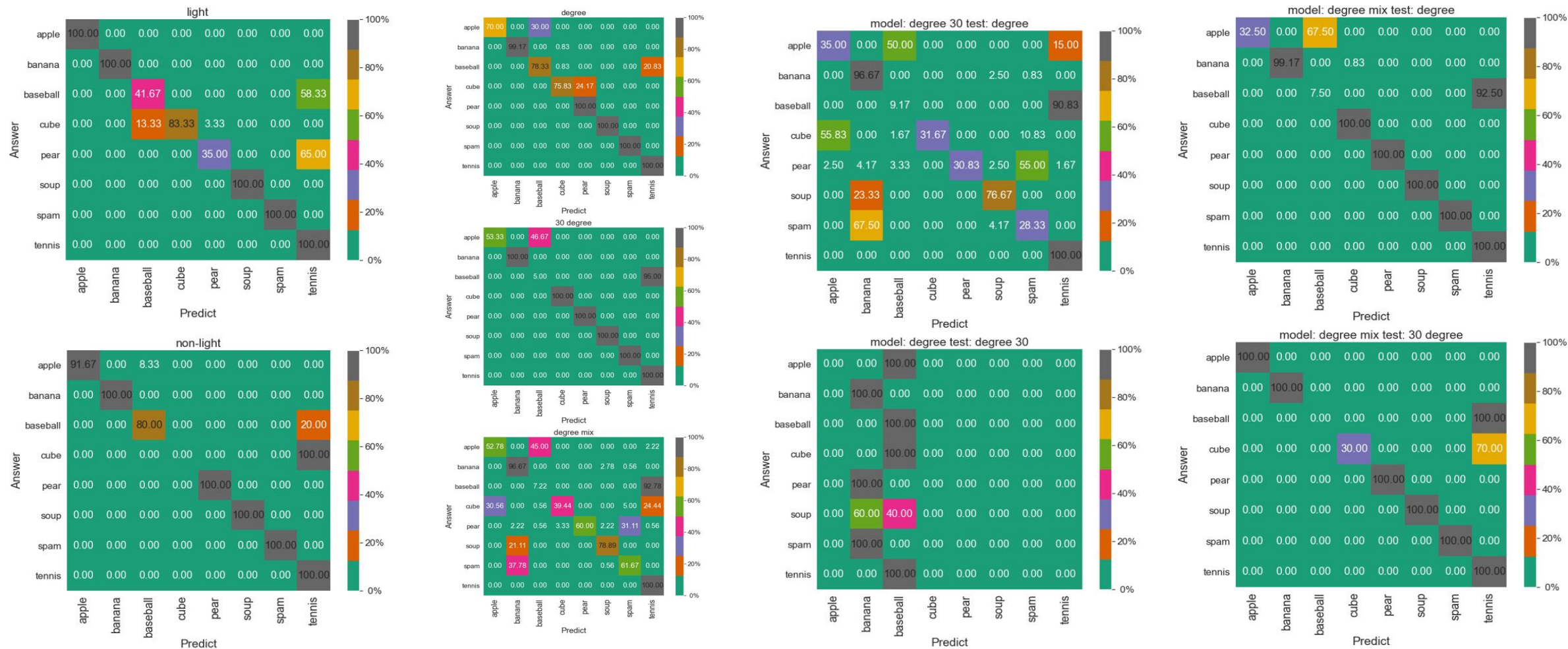
Separation
object and background

object only 2021/08/05 19:49:58

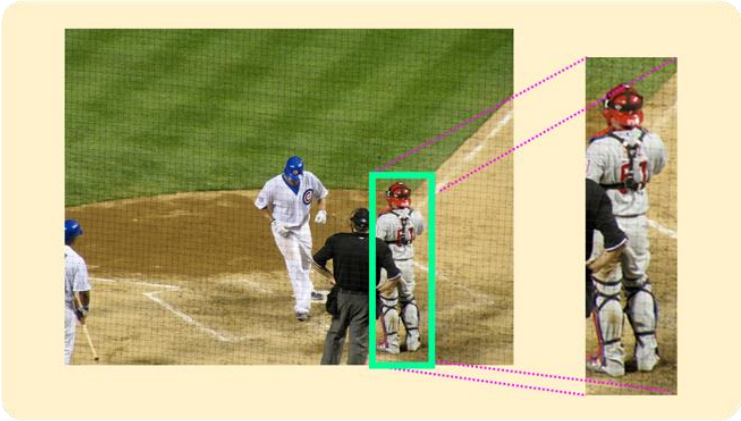
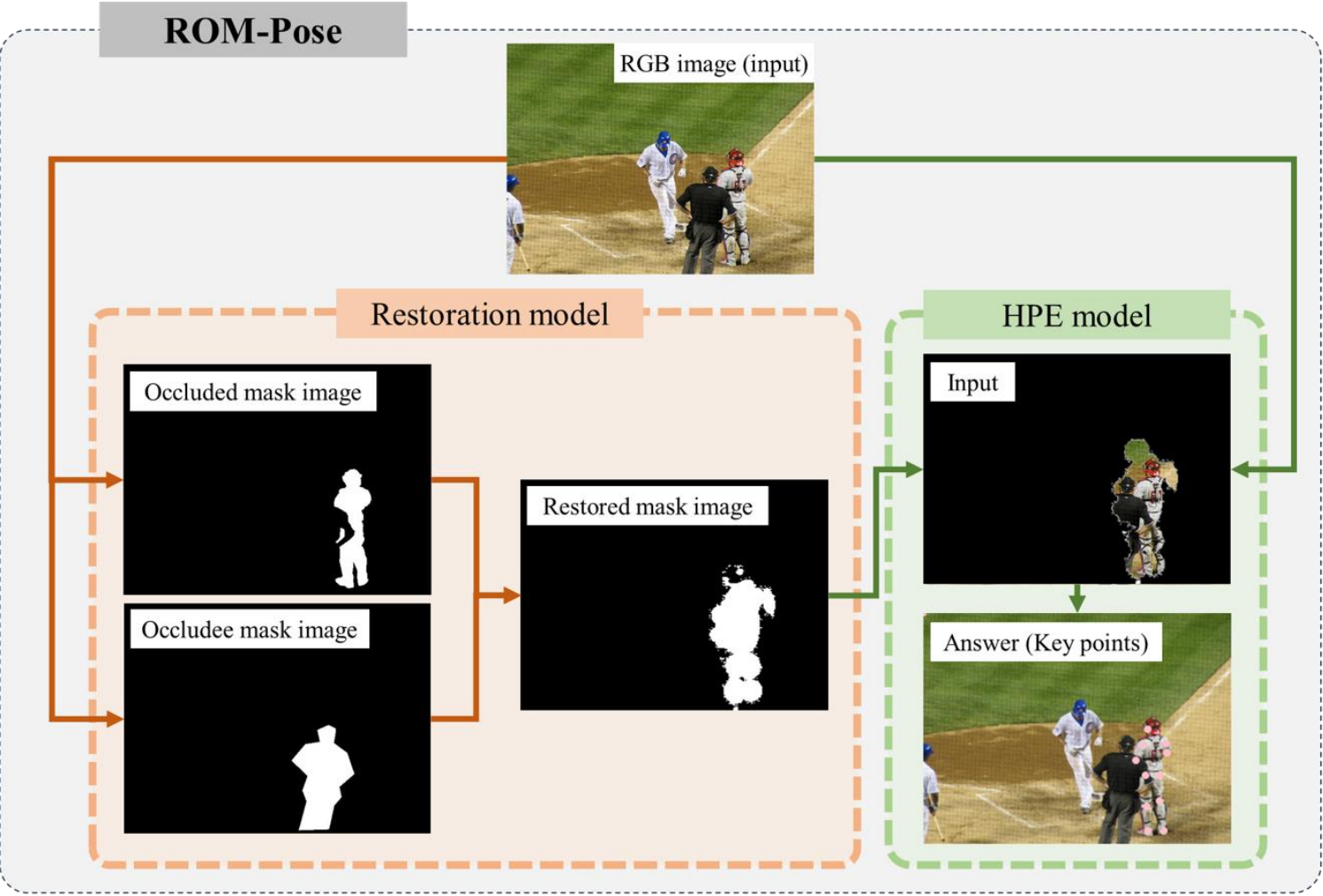


Perception parts of object

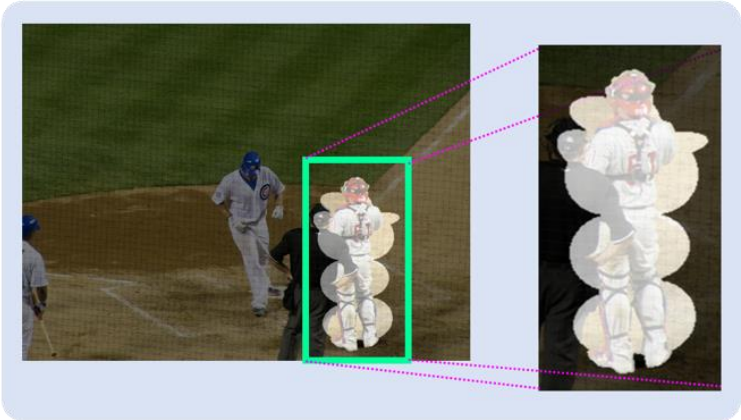
Object classification based on point cloud data from rgb-d camera



Human Pose Estimation with restored occluded mask image



(a) Original input image



(b) ROM-Pose input image

