

mmwave 센서를 사용한 위험행동 및 일상행동 인식 장치

201924403 강수빈

201724478 박준형

201924539 이영인

목차

1. 과제소개

2. 과제내용

3. 과제결과

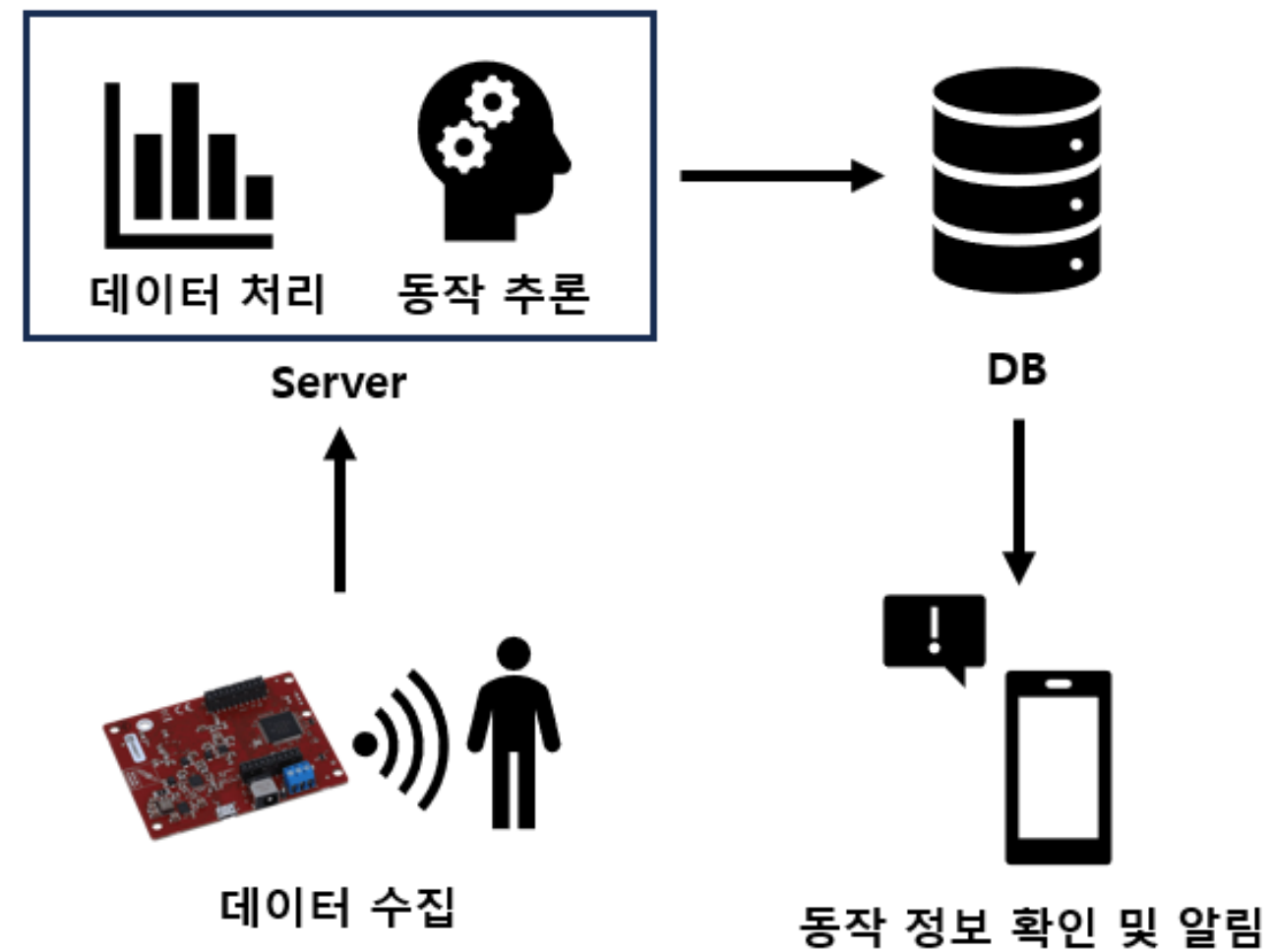


고령자들에게 흔히 발생하는 낙상, 어떻게 해결할 수 있을까 ?



낙상사고 후 바로 일어나지 못하거나 도움을 부르지 못한다면 낙상은 더 많은 문제를 초래할 수 있다.

이런 문제를 해결하기 위한 **cctv설치는 사생활을 침범**할 수 있으므로 **mmwave센서를 통해 낙상을 감지**하고 알림이 가는 서비스를 제공하여 사생활을 침범하지 않으면서 고령자들에게 도움이 될 수 있는 시스템을 제공하고자 한다.



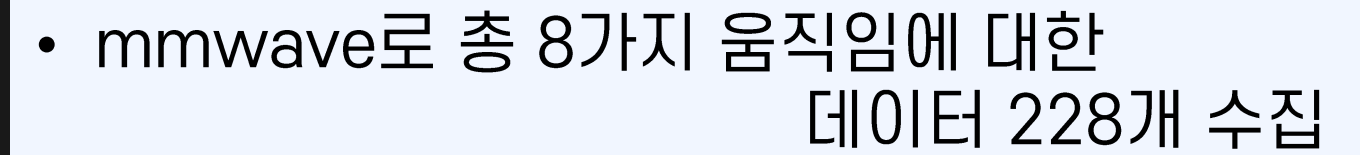
1. Mmwave 센서를 통한 행동 데이터 수집
2. 서버에서 데이터 처리 및 동작 추론
3. 추론 결과 데이터를 DB에 저장
4. 앱을 통한 동작 정보 확인 및 알림


































































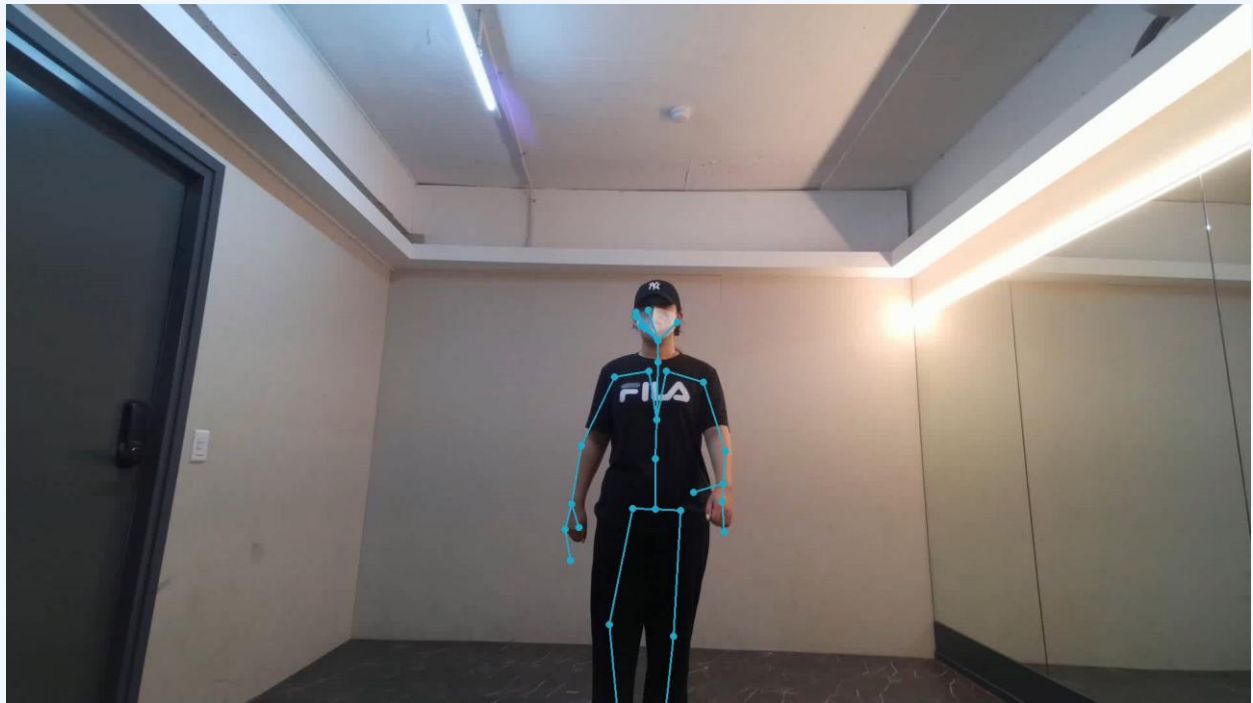
[일상 행동]



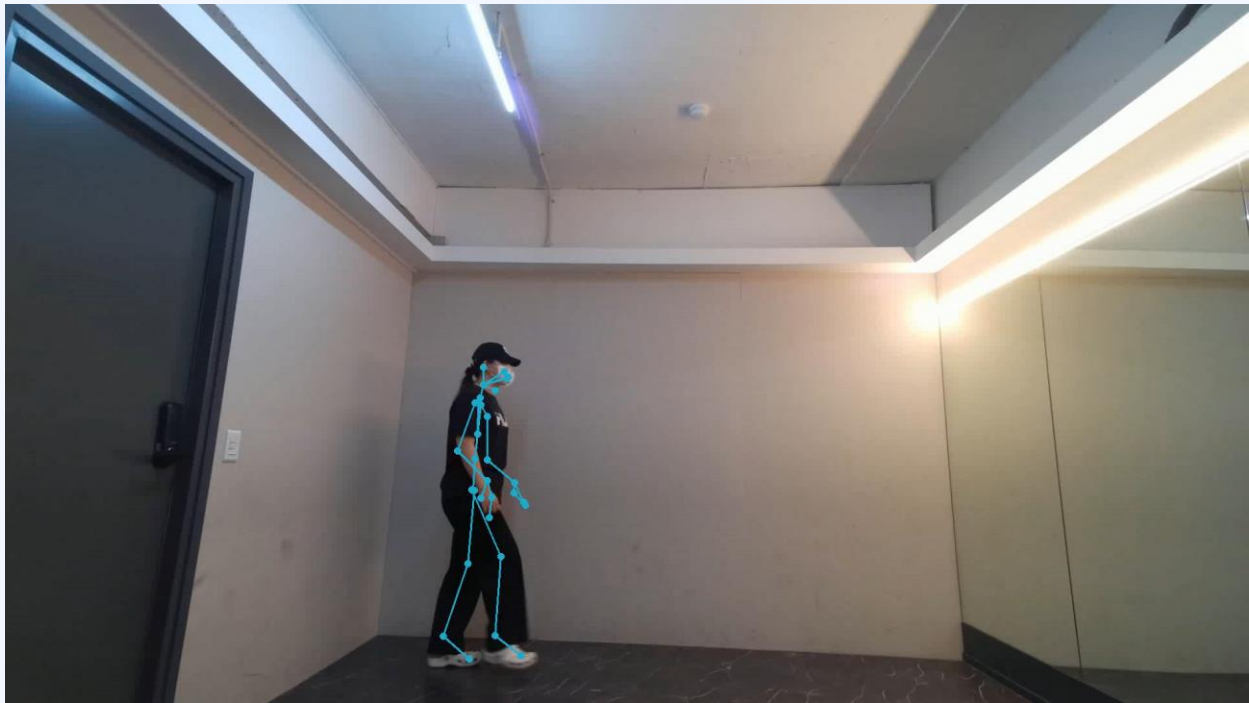
[위험 행동]



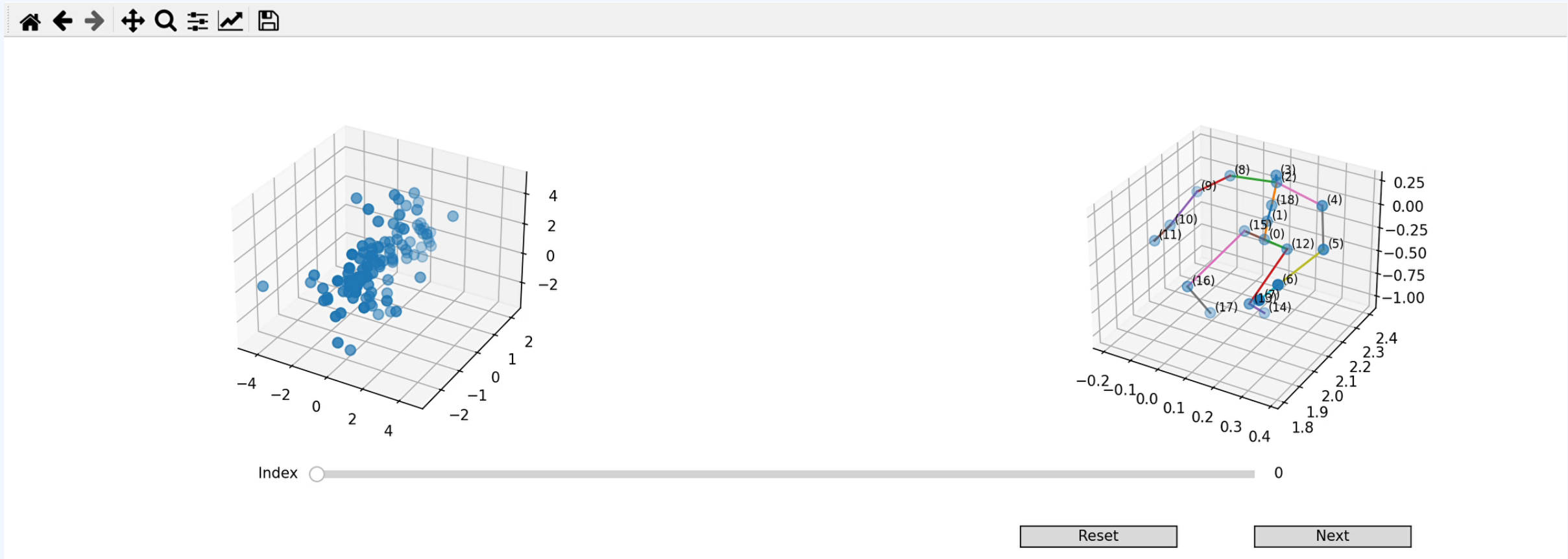
 A_2m_lying_1.npy	 A_2m_lying_2.npy	 A_2m_lying_3.npy
 A_2m_lying_4.npy	 A_2m_run_1.npy	 A_2m_run_2.npy
 A_2m_run_3.npy	 A_2m_run_4.npy	 A_2m_run_5.npy
 A_2m_sitChair_1.npy	 A_2m_sitChair_2.npy	 A_2m_sitChair_3.npy
 A_2m_sitChair_4.npy	 A_2m_sitChair_5.npy	 A_2m_sitFloor_1.npy
 A_2m_sitFloor_2.npy	 A_2m_sitFloor_3.npy	 A_2m_sitFloor_4.npy
 A_2m_sitFloor_5.npy	 A_2m_standing_1.npy	 A_2m_standing_2.npy
 A_2m_standing_3.npy	 A_2m_standing_4.npy	 A_2m_standing_5.npy
 A_2m_walking_1.npy	 A_2m_walking_2.npy	 A_2m_walking_3.npy
 A_2m_walking_4.npy	 A_2m_walking_5.npy	 A_2m_walking_6.npy
 A_3m_fall_1.npy	 A_3m_fall_2.npy	 A_3m_fall_3.npy
 A_3m_fall_4.npy	 A_3m_fall_5.npy	 A_3m_lying_1.npy
 A_3m_lying_2.npy	 A_3m_lying_3.npy	 A_3m_lying_4.npy
 A_3m_run_1.npy	 A_3m_run_2.npy	 A_3m_run_3.npy
 A_3m_run_4.npy	 A_3m_run_5.npy	 A_3m_sitChair_1.npy
 A_3m_sitChair_2.npy	 A_3m_sitChair_3.npy	 A_3m_sitChair_4.npy
 A_3m_sitChair_5.npy	 A_3m_sitChair_6.npy	 A_3m_sitFloor_1.npy
 A_3m_sitFloor_2.npy	 A_3m_sitFloor_3.npy	 A_3m_sitFloor_4.npy
 A_3m_sitFloor_5.npy	 A_3m_standing_1.npy	 A_3m_standing_2.npy
 A_3m_standing_3.npy	 A_3m_standing_4.npy	 A_3m_standing_5.npy
 A_3m_walking_1.npy	 A_3m_walking_2.npy	 A_3m_walking_3.npy

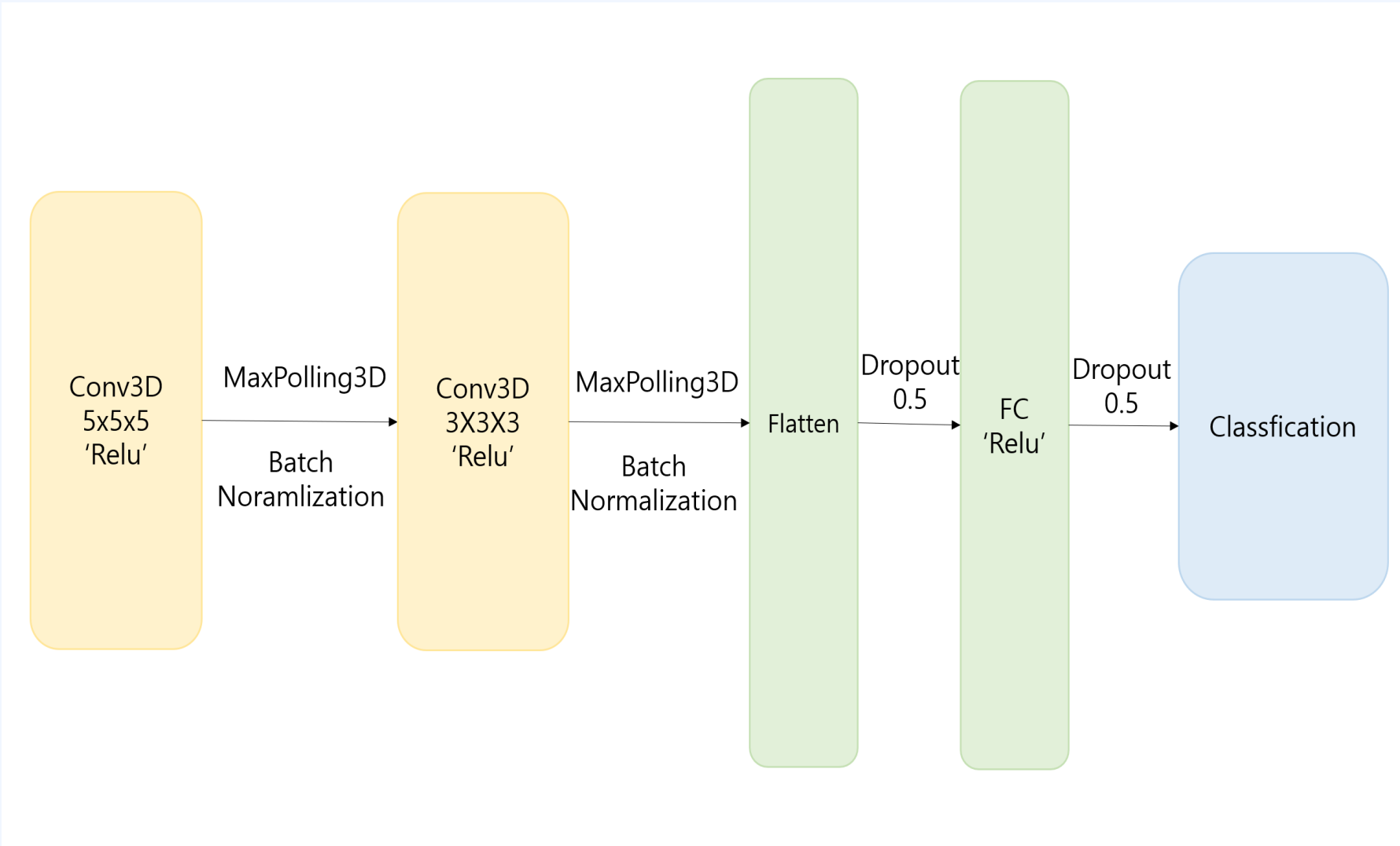


2M



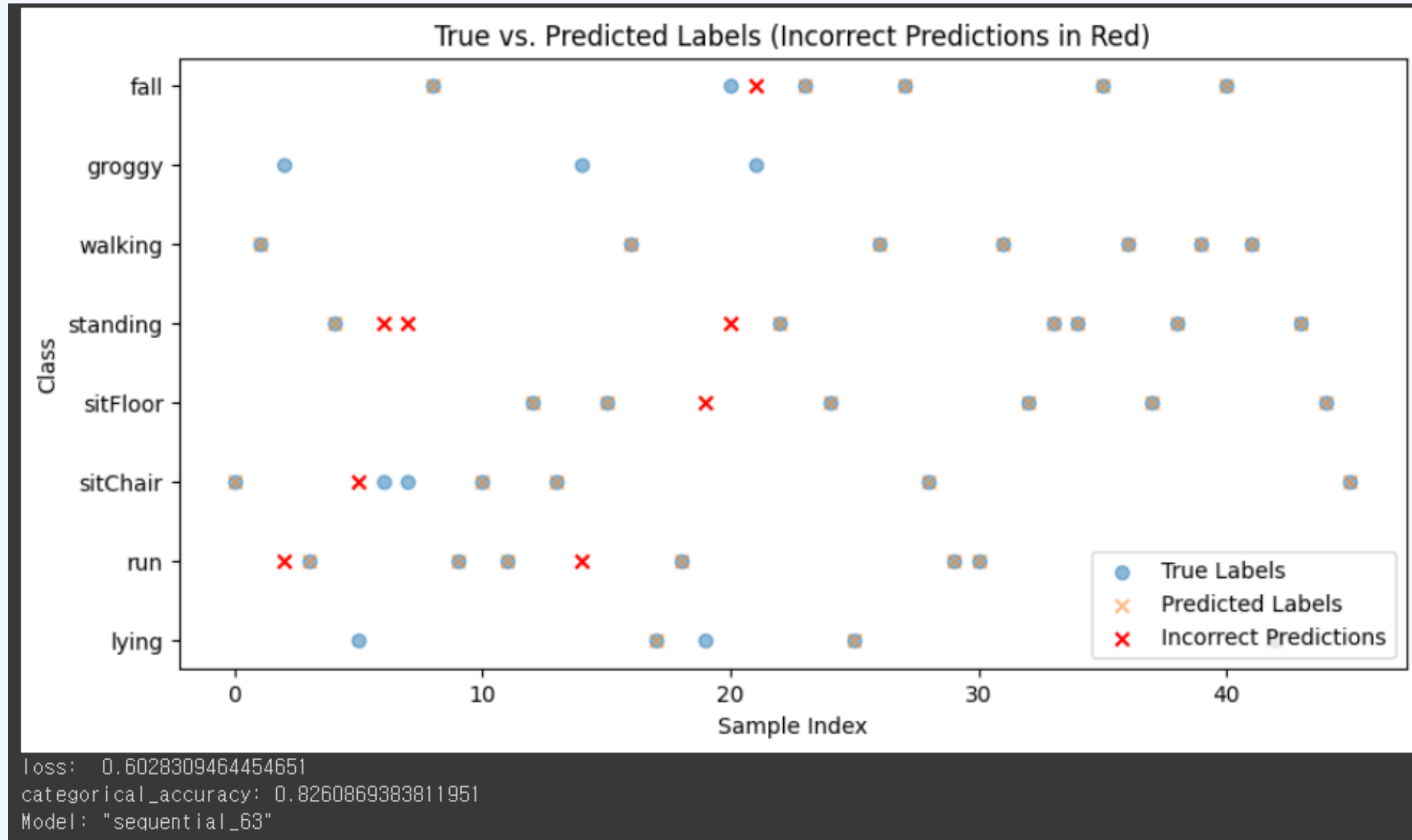
3M





Layer (type)	Output Shape	Param #
=====		
conv3d (Conv3D)	(None, 83, 64, 2, 8)	1008
max_pooling3d (MaxPooling3D)	(None, 42, 32, 1, 8)	0
batch_normalization (Batch Normalization)	(None, 42, 32, 1, 8)	32
conv3d_1 (Conv3D)	(None, 21, 16, 1, 16)	3472
max_pooling3d_1 (MaxPooling3D)	(None, 11, 8, 1, 16)	0
batch_normalization_1 (Batch Normalization)	(None, 11, 8, 1, 16)	64
flatten (Flatten)	(None, 1408)	0
dropout (Dropout)	(None, 1408)	0
...		
Total params: 185960 (726.41 KB)		
Trainable params: 185912 (726.22 KB)		
Non-trainable params: 48 (192.00 Byte)		

3D CNN 모델 (x, y, z, v, SNR, range)



- Loss : 0.6028
- Accuracy : 0.8260

