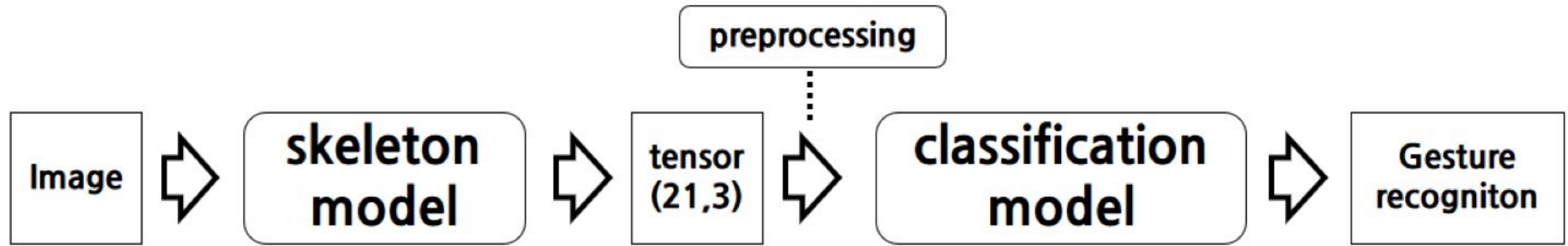2024 인공지능시스템 설계 프로젝트

mediapipe를 이용한 ASL 숫자 제스쳐 인식

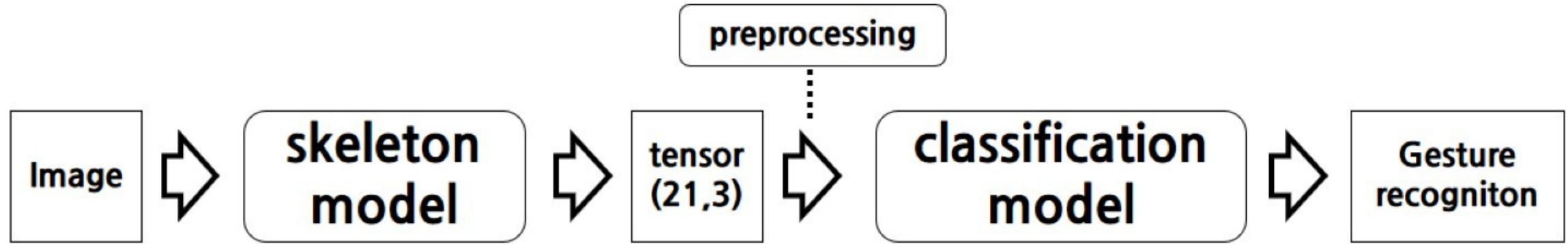**2024-19448**

기계공학부 김민재

HGR model
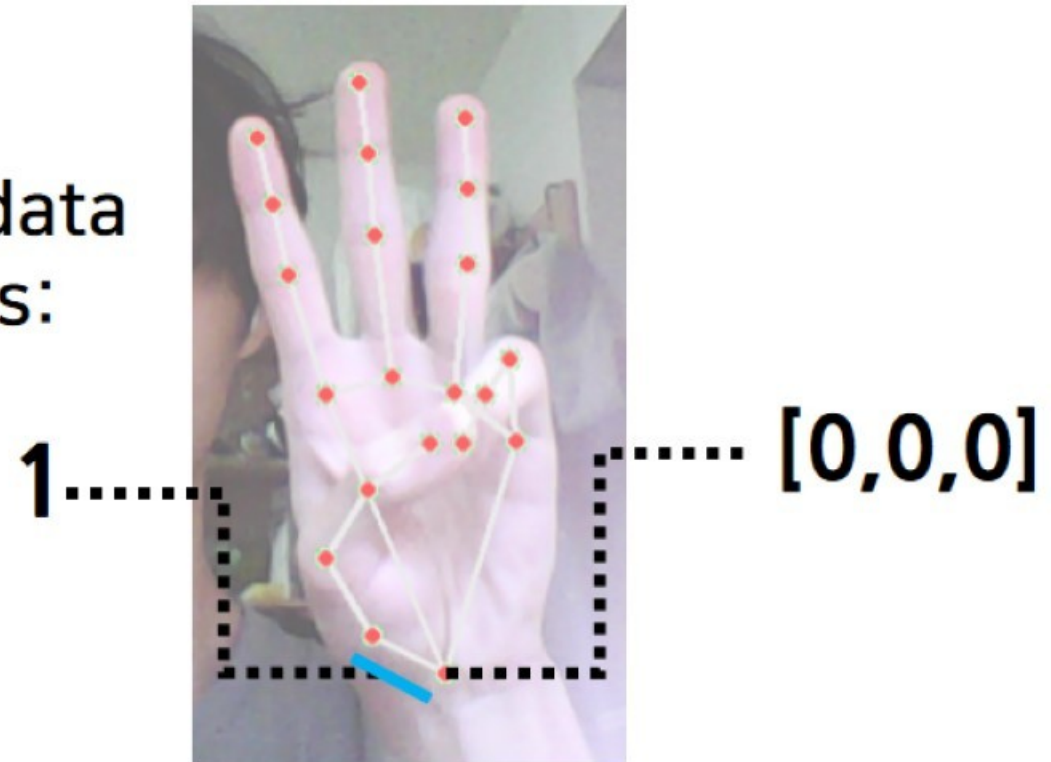

Learning Data generation
   -image on web
   -image through camera
   >> skeleton model(mediapipe) >> landmarks tensor(21,3)

HGR model

Data preprocessing
- extract significant feature in data
  - feature that is meaningless:
    - **absolute coordinate**
    - **size of the hand**

HGR model
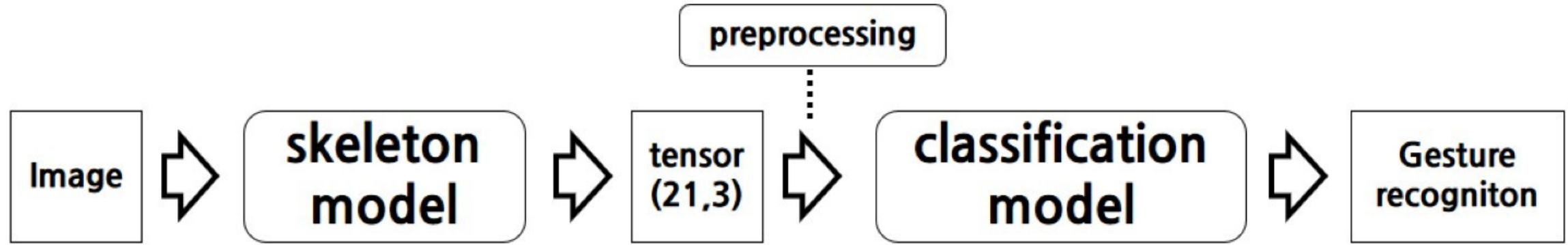
Data augmentation
-to reduce bias
-mirror
-rotation

HGR model

Image → skeleton model → tensor (21,3) → [preprocessing] → classification model → Gesture recogniton

classification model

tensor (21,3) --flatten--> (63,) → **affine** 128 → **affine** 64 → **softmax** → class

dropout 0.2
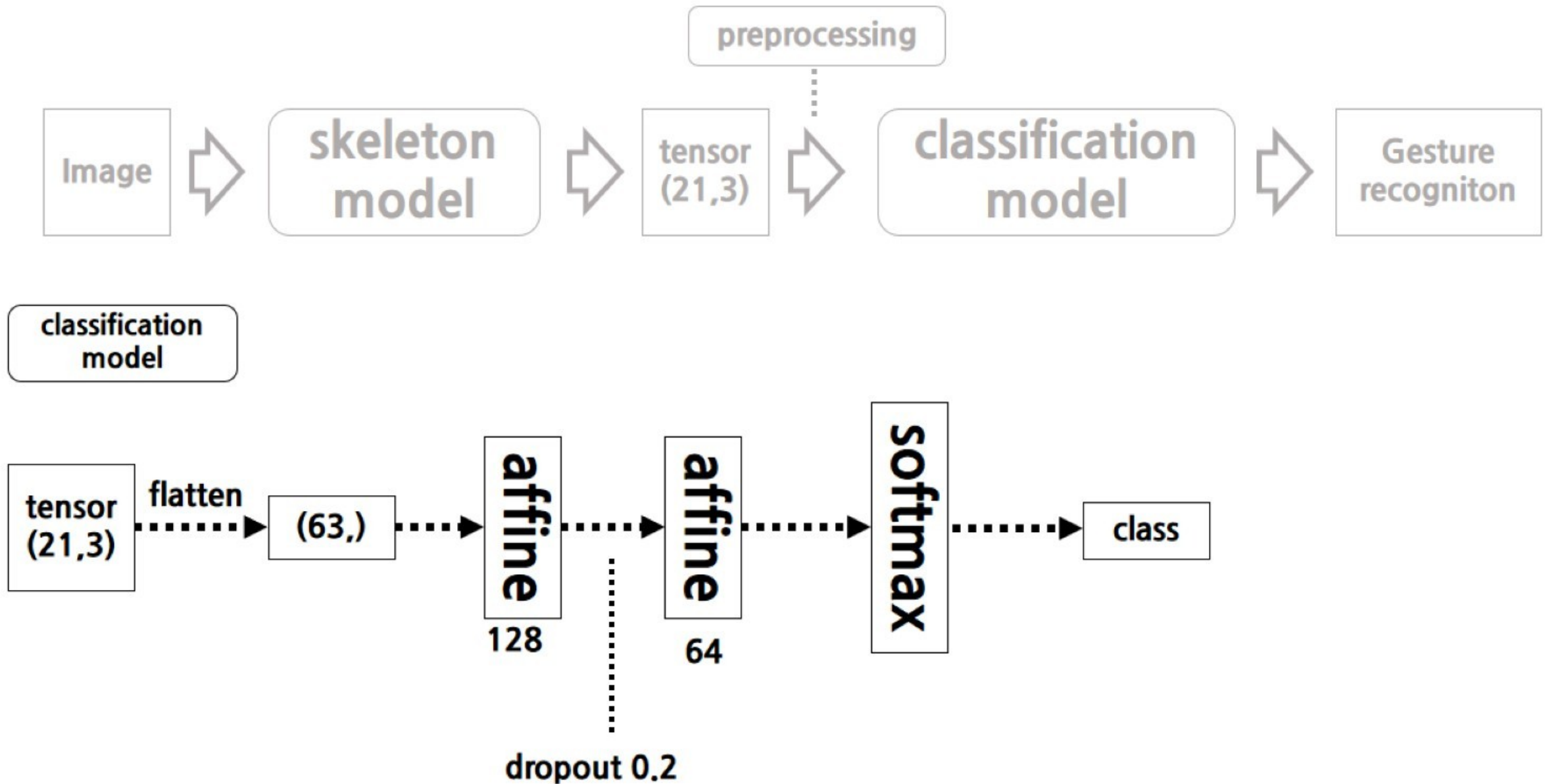
Frame detection

Frame detection

-comparing sum of each section's average color difference with threshold


```python
if recogTerm==1:
    change_count += 1
    print(f"{change_count}: {gesture_name}")
if recogTerm>=1:
    recogTerm-=1
elif abs(prev_difference-img_difference)>3.23:
    recogTerm=5
```

Accuracy _by test video

	predicted									
actual	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	10									
2		10								
3			9			**1**				
4				9		**1**				
5					10					
6						10				
7							10			
8								10		
9									10	
10										10