

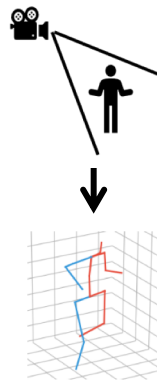
Image Assistance and Bone-Length Stability based 3D Pose Estimation with Monocular Camera

王昊 池永研究室 修士課程修了

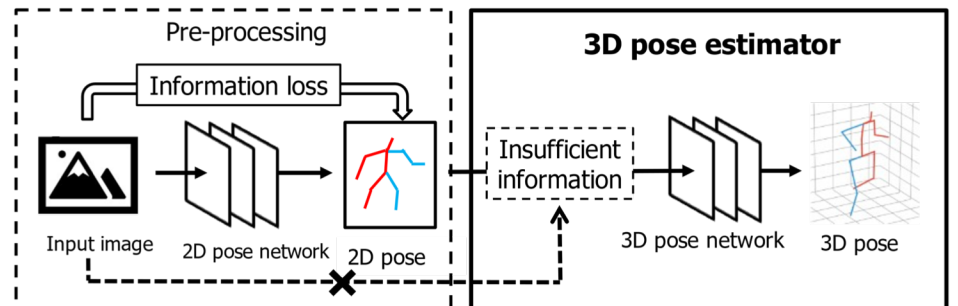
Background

- Application
 - Sports analysis
 - Human body reconstruction
 - VR/AR applications
 - ...

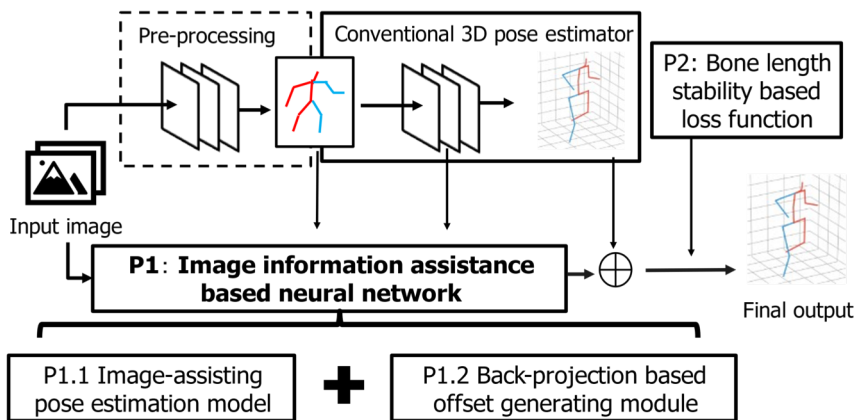
Proposed method



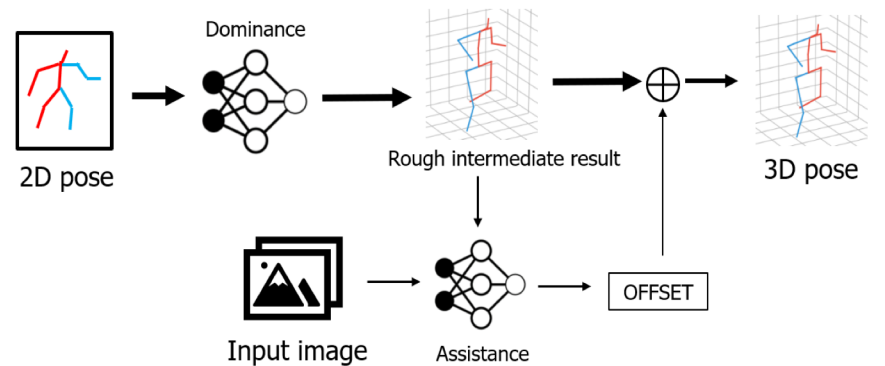
Problem statement



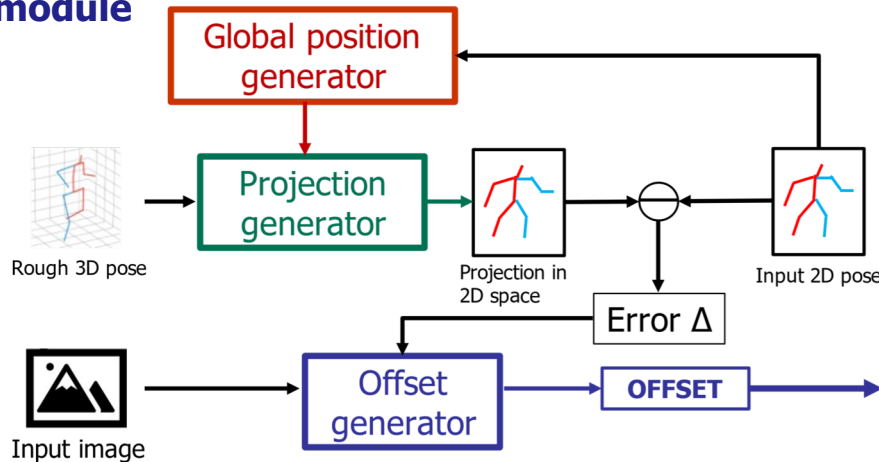
Overall framework



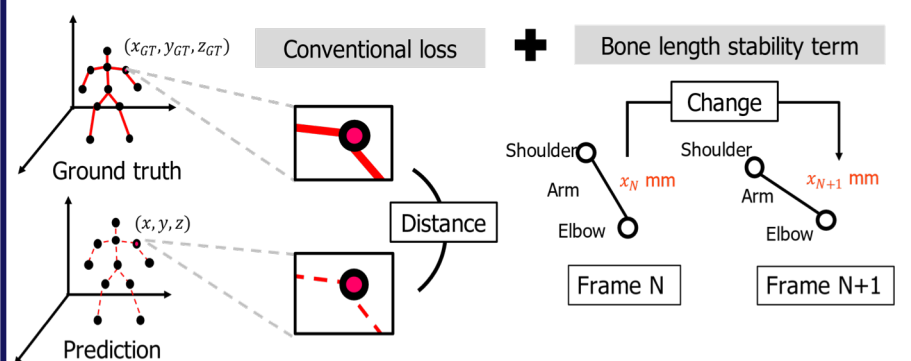
P1.1: Image-assisting pose estimation model



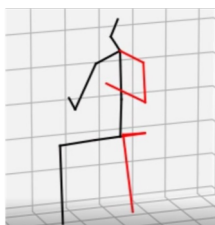
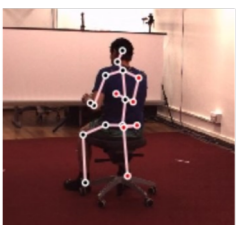
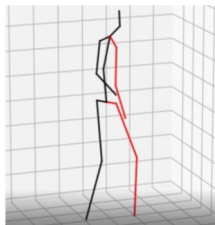
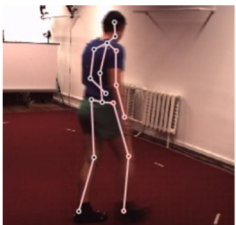
P1.2: Back projection based offset generating module



P2: Bone length stability based loss function



Experiments Result



Action	Conventional work/mm	P1+P2 / mm
Direct	45.9	44.1
Discuss	47.5	46.6
Eat	44.3	43.0
.....		
Greet	46.4	44.8
Walk	33.1	32.3
Average	47.6	46.5

	Acc/mm	Δ Bone length <0.5 mm
VideoPose3D	47.6	59%
P1+P2	46.5	72% (+13%)

Conclusion

- The final MPJPE result is 46.5mm, which is an improvement of 1.1mm compared with the VideoPose3D baseline.
- With our proposed loss, the bone length stability increases.

