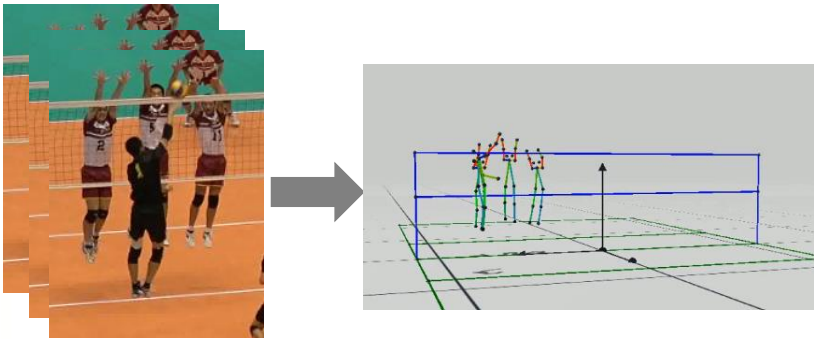


Spatial Vector Matching and Composite Temporal Constraints Based Multi-Person 3D Pose Reconstruction in Volleyball Games

修士課程卒業 李 琪瑞

Background



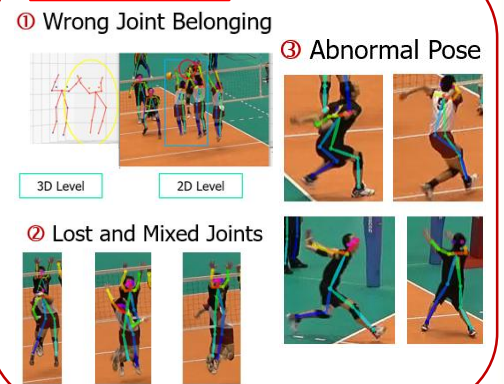
Volleyball Video

Applications

Strategy Analysis

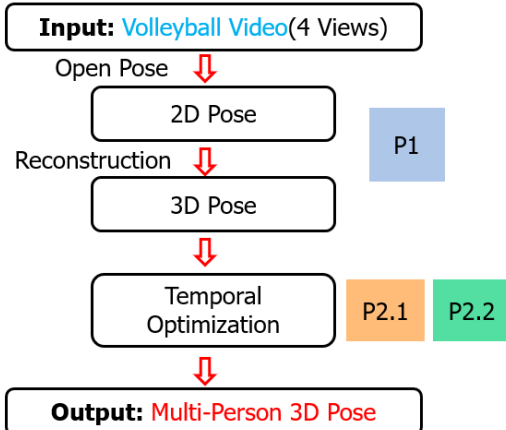
- Attack Quality Evaluation
- Defense Quality Evaluation
- Player Evaluation
- Spike Motion Evaluation

Problems

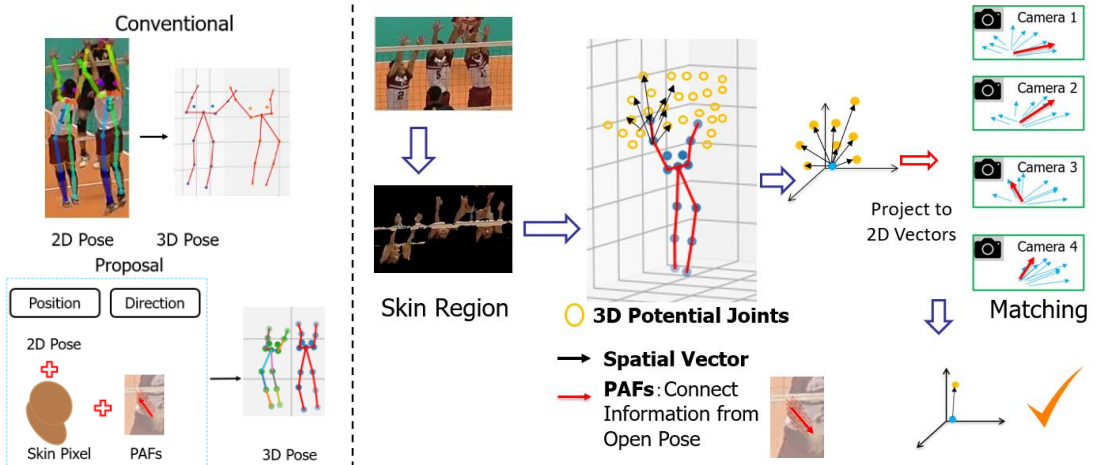


Proposals

Basic Framework

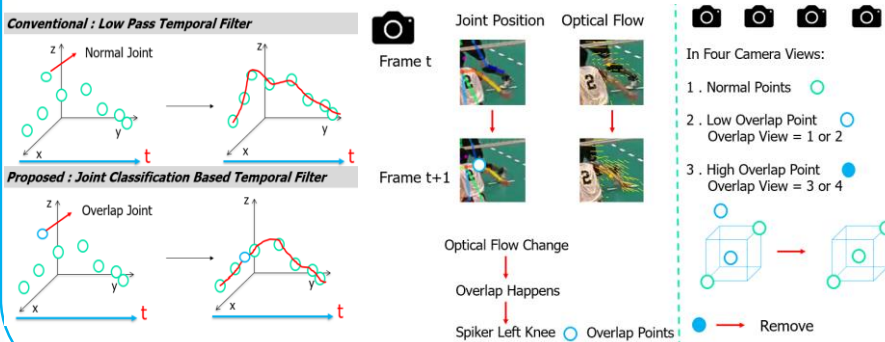


P1: Spatial Vector Matching Based Upper Body Joints Correction

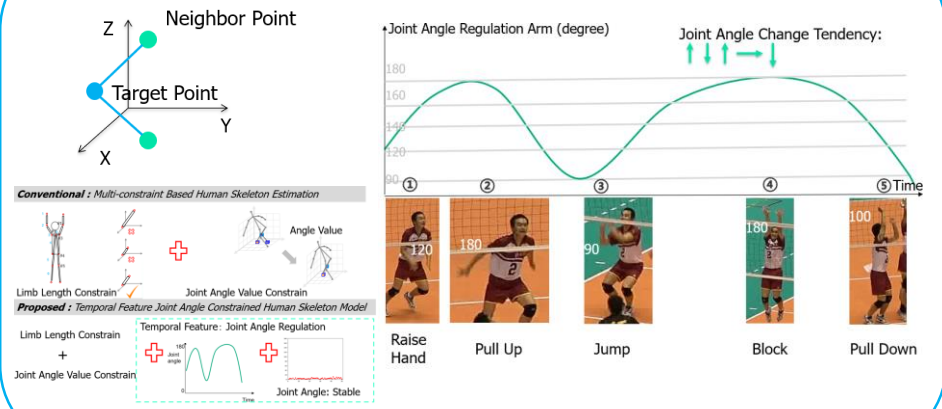


P2.1: Joint Classification Based Temporal Filter Using Optical Flow

Before Temporal Smoothness, detect overlap Joint and Normal Joint

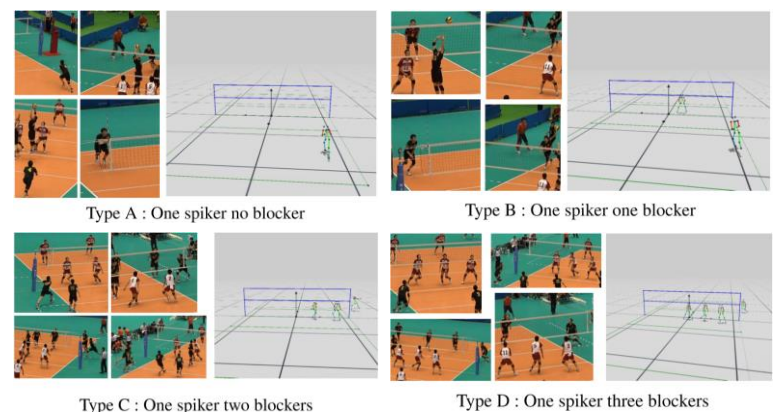


P2.2: Joint Angle Regulation Constrained Joint Searching



Experiment result

Item		Basic Framework	P1+P2.1	P1+P2.1+P2.2
PCK [%] @ 100mm	Upper	76.67	82.01	87.37
	Lower	88.00	92.03	94.17
	Total	81.20	86.02	90.09
PCK [%] @ 30mm	Upper	62.79	66.53	74.14
	Lower	75.50	76.67	82.30
	Total	67.87	70.3	77.41



Conclusion

This work achieved accuracy averagely 90.09% for percentage of correct key points(PCK) 100mm and 77.41% for PCK 30mm.

