Voxel-based Recovery and Spatial-temporal Correction for Multi-view 3D Pose Reconstruction of Jump Analysis in Figure Skating

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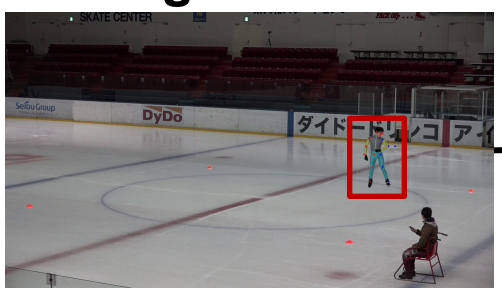
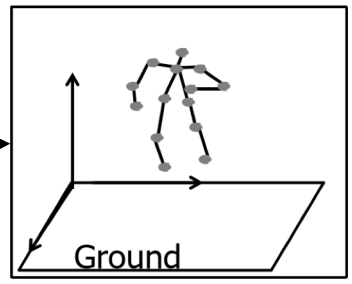
Background

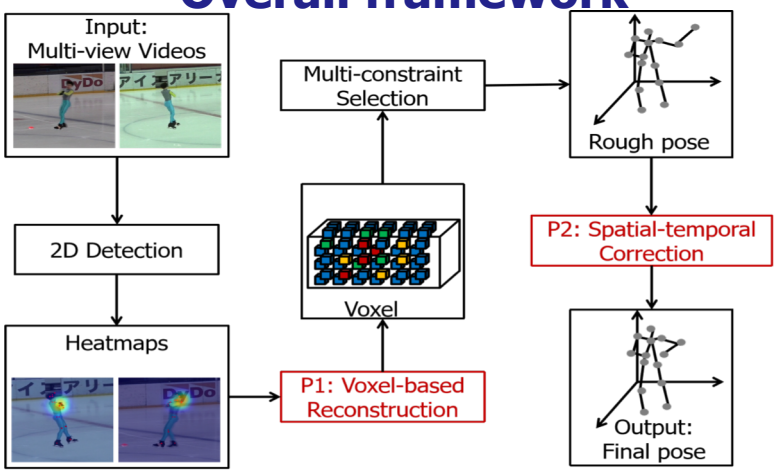




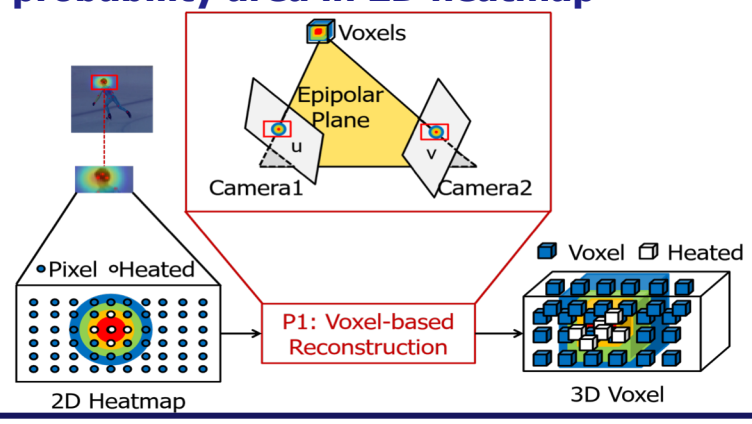
- Target
  - Accurate 3D pose reconstruction of jump in figure skating
- Challenges
  - Abnormal pose
  - Self-occlusion
  - …

Proposed method

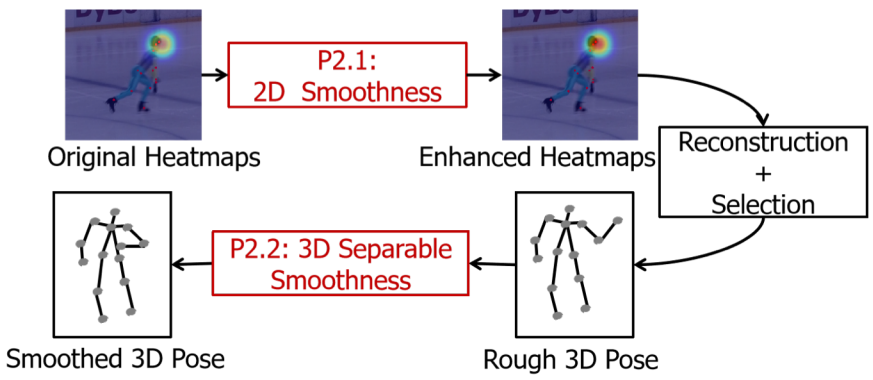
Overall framework



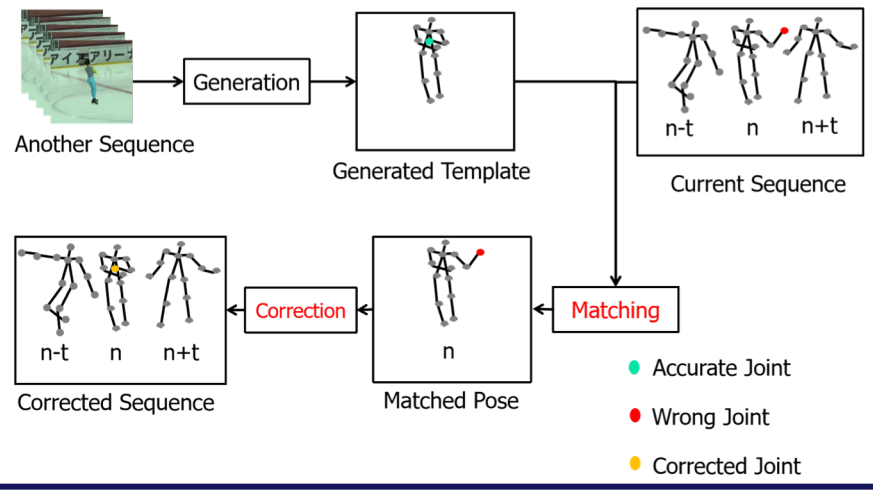
P1: Voxels based recovery method of high probability area in 2D heatmap



P2.1+P2.2: Temporal smoothness on both 2D and 3D level

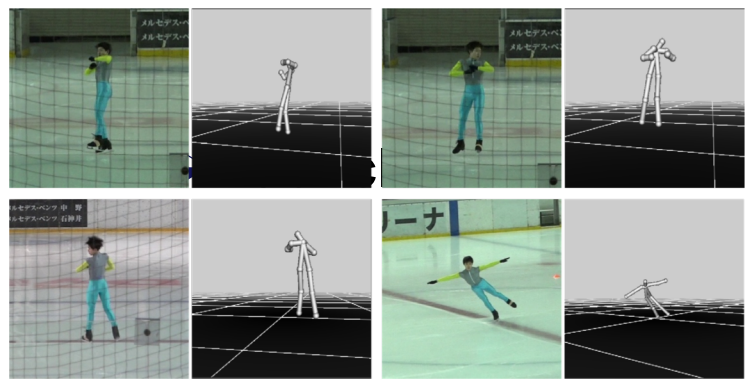


P2.3: Spatial smoothness on 3D level



Experiments Result

Items		Conventional work	P1+P2.1+P2.2	P1+P2
S1 Results	Upper	33.10	37.31	22.23
	Lower	14.96	3.05	3.05
	Total	25.32	34.58	14.00
S2 Results	Upper	17.20	23.28	19.16
	Lower	16.46	7.48	6.07
	Total	16.89	16.51	13.56
S3 Results	Upper	45.76	18.52	14.34
	Lower	13.64	12.03	10.96
	Total	32.00	15.73	12.90



Conclusion

- The final result reduce about 49% error compared with conventional work

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