Intra-Frame Skeleton Constraints Modeling and Grouping Based Stacked Residual Graph Convolution Network for 3D Human Motion Prediction

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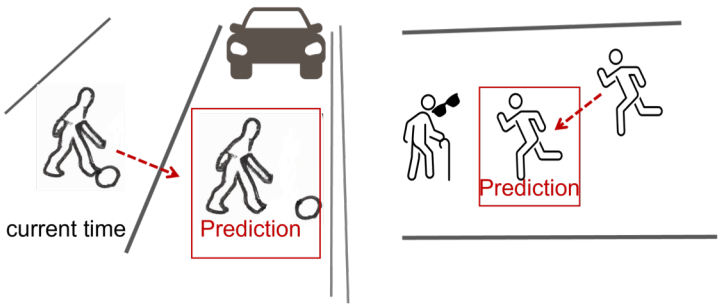
Research background

3D Human Motion Prediction

Predicting future motions and poses of the human body



Pedestrian avoidance　　Blind collision prediction

3D human motion prediction system

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Help with autonomous driving and human-machine interaction

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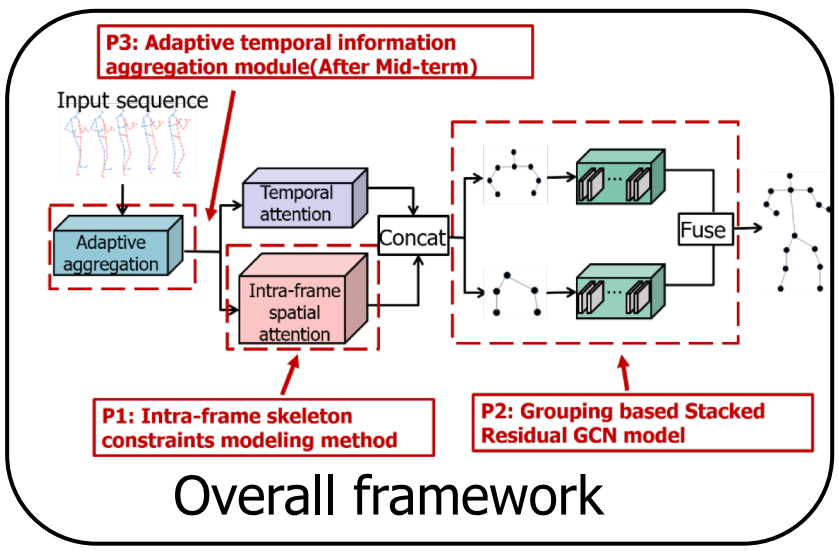
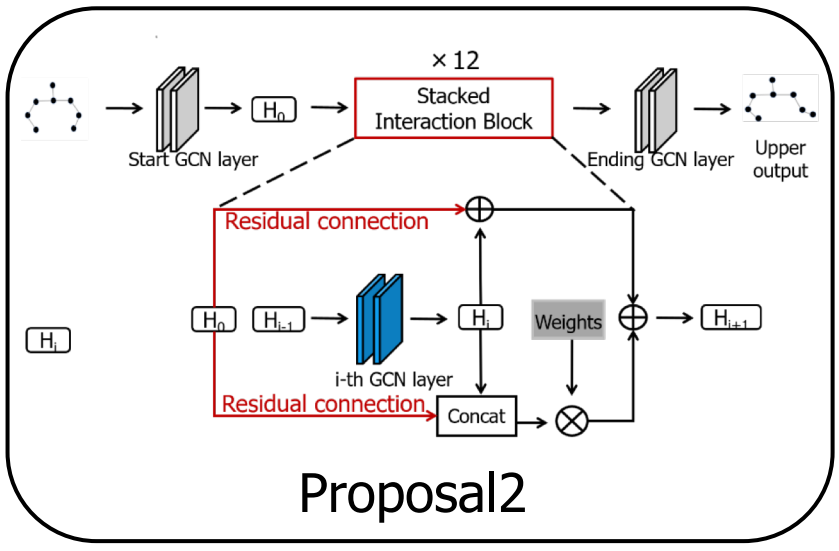
A prediction task that requires higher accuracy

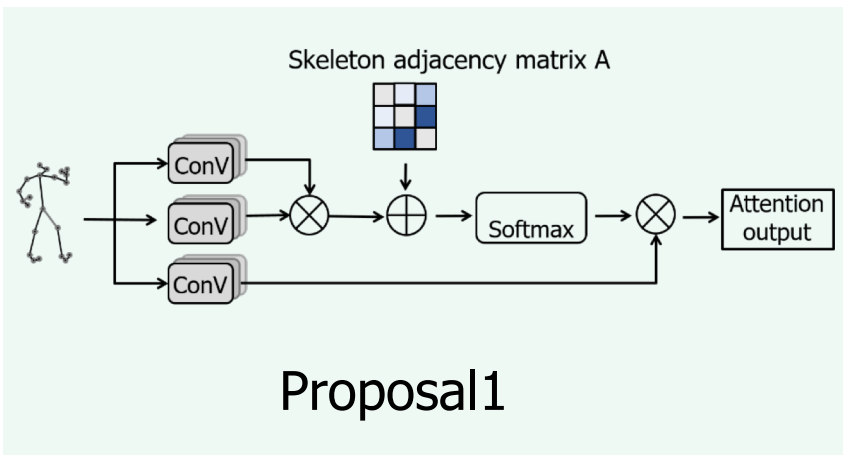
Proposed method



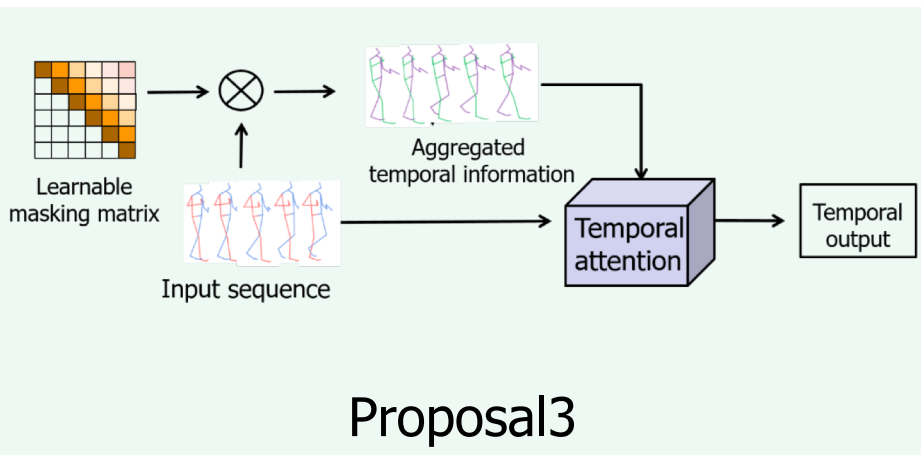
Overall framework



Proposal2



Proposal1



Proposal3

Experiments

MPJPE for both short-term and long-term prediction on the Human3.6M dataset

Millisecond	Human3.6M							
	80	160	320	400	560	720	880	1000
LTD-50-25	12.2	15.4	50.7	61.5	79.6	93.6	105.2	112.4
LTD-10-10	11.2	23.4	47.9	58.9	78.3	93.3	106.0	114.0
CW1	10.7	23.0	47.8	59.1	78.2	92.4	104.4	111.9
siMLPe	10.3	22.6	48.5	59.7	78.2	92.0	104.4	**110.8**
ours	**10.2**	**22.4**	**46.8**	**57.9**	**77.0**	**91.3**	**103.9**	111.6

Conclusion

The evaluation result shows that the proposals achieves an average MPJPE of 31.54mm for short-term prediction

and 66.71mm for long-term prediction and both outperform the state-of-the-art approaches.