



Motivation



- Why? When applying a pre-trained 2D-to-3D human pose lifting model to a target unseen dataset, large performance degradation is commonly encountered due to **domain shift**.
- What? 1) the large distribution gap over global positions of poses between the source and target datasets due to variant camera parameters and settings, and 2) the deficient diversity of **local** structures of poses in training.
- **How?** Combine global adaptation and local generalization.



Local Pose Augmentation

Global Adaptation meets Local Generalization: Unsupervised Domain Adaptation for 3D Human Pose Estimation

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Method



Experiments



Comparison of 2D scale (first row), root position of x-axis (second row), y-axis (third row) in source domain (left), source after GPA (middle), domain target domain (right). Source: H3.6M. Target: 3DHP.





Ablation study. Source: H3.6M. Target: 3DHP.

IGCN	95.96	80.68	48.48
PA	87.64 (-8.3)	84.21 (+3.5)	51.24 (+2.8)
SPA	86.56 (-9.4)	83.85 (+3.2)	50.98 (+2.5)
PoseDA	78.37 (-17.6)	86.17 (+5.5)	54.74 (+6.3)
pleBaseline	81.23	85.85	5 3.95
PA	66.56 (-14.7)	90.16 (+4.3)	60.41 (+6.5)
SPA	69.19 (-12.0)	89.90 (+4.1)	58.50 (+4.6)
PoseDA	64.79 (-16.4)	90.55 (+4.7)	61.32 (+7.4)
GCN	81.19	85.92	53.78
GCN PA	81.19 74.31 (-6.9)	85.92 88.72 (+2.9)	53.78 56.20 (+2.4)
GCN PA SPA	81.19 74.31 (-6.9) 74.41 (-6.8)	85.92 88.72 (+2.9) 88.58 (+2.7)	53.78 56.20 (+2.4) 55.52 (+1.7)
GCN PA SPA PoseDA	81.19 74.31 (-6.9) 74.41 (-6.8) 69.50 (-11.7)	85.92 88.72 (+2.9) 88.58 (+2.7) 90.15 (+4.2)	53.78 56.20 (+2.4) 55.52 (+1.7) 58.56 (+4.8)
GCN PA SPA PoseDA eoPose3D	81.19 74.31 (-6.9) 74.41 (-6.8) 69.50 (-11.7) 82.55	85.92 88.72 (+2.9) 88.58 (+2.7) 90.15 (+4.2) 85.71	53.78 56.20 (+2.4) 55.52 (+1.7) 58.56 (+4.8) 53.35
GCN PA PA PA PoseDA eoPose3D PA	81.19 74.31 (-6.9) 74.41 (-6.8) 69.50 (-11.7) 82.55 66.65 (-15.9)	85.92 88.72 (+2.9) 88.58 (+2.7) 90.15 (+4.2) 85.71 90.05 (+4.3)	53.78 56.20 (+2.4) 55.52 (+1.7) 58.56 (+4.8) 53.35 60.24 (+6.9)
GCN PA PA PA PoseDA PA PA	81.19 74.31 (-6.9) 74.41 (-6.8) 69.50 (-11.7) 82.55 66.65 (-15.9) 66.07 (-16.5)	85.92 88.72 (+2.9) 88.58 (+2.7) 90.15 (+4.2) 85.71 90.05 (+4.3) 90.87 (+5.2)	53.78 56.20 (+2.4) 55.52 (+1.7) 58.56 (+4.8) 53.35 60.24 (+6.9) 60.07 (+6.7)

MPJPE (\downarrow)

PCK (↑)

AUC (\uparrow)

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