Generating 3D Human models from RGB data

Literature Survey

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1 Relevant Papers

- End-to-end Recovery of Human Shape and Pose - Angjoo Kanazawa et al, UC Berkeley - *CVPR 2018*
- Keep it SMPL: Automatic Estimation of 3D Human Pose and Shape from a Single Image, MPI-IS - *ECCV 2016*
- DeepCut: Joint Subset Partition and Labeling for Multi Person Pose Estimation, MPI-IS & Stanford - *CVPR 2016*

2 Existing Methods

- To estimate 3D joint locations, two broad methods are used:
  - Two stage: Predict 2D joint locations using 2D pose detectors or ground truth 2D pose and then predict 3D joint locations by regression or model fitting using a learned dictionary of 3D skeletons (common approach). Most methods make assumptions of limb-length/proportions. More robust to domain shift but throws away image information in estimating 3D pose.
  - Direct Estimation: Direct prediction from image pixels using penalized error functions between estimate 2D joint locations and projected 3D joint locations