Human Body Pose Estimation

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Proposal:

In this project, we are going to do research on pose estimation. This is an interesting topic because it can be applied in multiple aspects, such as entertainment (Kinect) and sports. Here, we will focus the accuracy improvement of pose estimation and its application in sports which can help people learn and compare the standard athletic movements from videos and coaches using the method of pose estimation. After roughly counting, there are 26 papers about pose estimation in ECCV2018 and 22 papers in CVPR2018 which means there are lots of materials for reference. We will use MPII dataset of 20k images with body joint annotations to learn heatmaps which is proposed in paper "2d human pose estimation: New benchmark and state of the art analysis." written by Andriluka, et al. We will start this project from pose estimation of single person first. The stacked hourglass networks have achieved great performance on MPII datasets so our method will be based on it. For better performance, we will try to modify the structure of networks and add the attention model to it in order to tighten the link between each joints. What's more, using pre-trained object detection model first can be a try in pose estimation. At last, we will show our results using figures and some performance metrics. The main evaluation matrix is "PCP" metric which considers a body part to be localized correctly if the estimated body segment endpoints are within 50% of the ground-truth segment length from their true locations.