Keep it SMPL: Automatic Estimation of 3D Human Pose and Shape from a Single Image

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- Describes the first method to automatically estimate the 3D pose of the human body as well as its 3D shape from a single unconstrained image
- Estimates a full 3D mesh and shows that 2D joints alone carry a surprising amount of information about body shape

- First uses a CNN-based method, DeepCut, to predict the 2D body joint locations
- Then fits a body shape model, called SMPL, to the 2D joints by minimizing an objective function that penalizes the error between the projected 3D model joints and detected 2D joints
- Because SMPL captures correlations in human shape across the population, robust fitting is possible with very little data

- Evaluates on Leeds Sports, HumanEva, and Human3.6M datasets