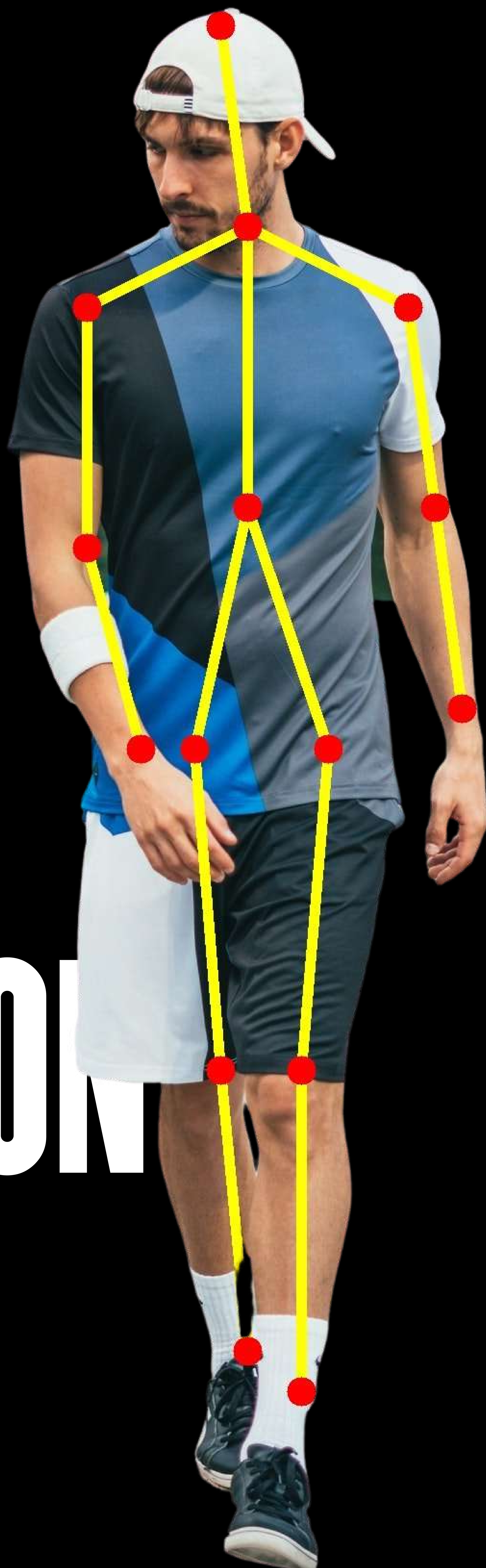


HOW HUMAN POSE ESTIMATION WORKS?





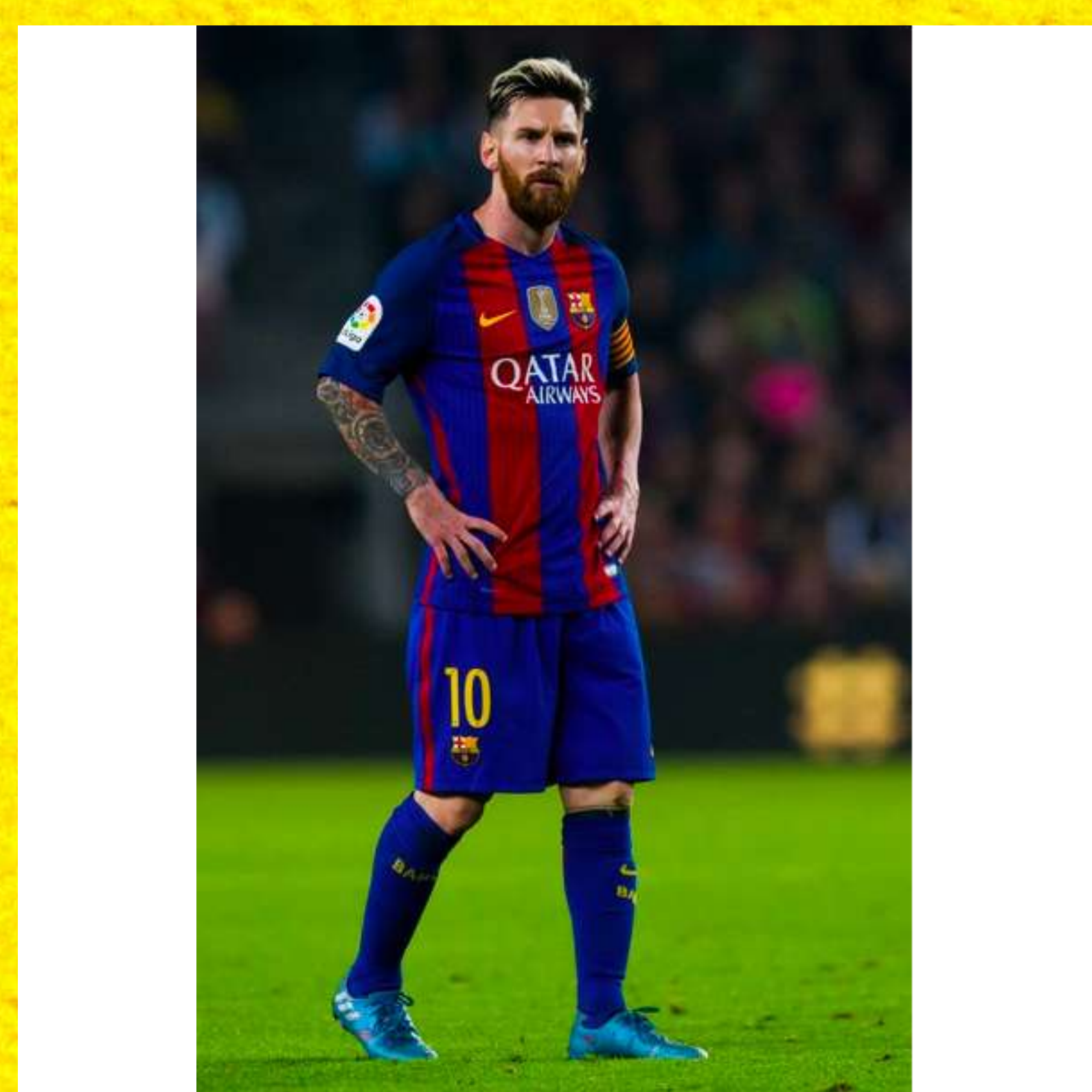
WHAT IS POSE ESTIMATION?

- Simply put, pose estimation is the localization of human joints in either images or videos.
- 2D Pose Estimation - Estimate a 2D pose (x,y) coordinates for each joint from a RGB image.
- 3D Pose Estimation - Estimate a 3D pose (x,y,z) coordinates a RGB image.

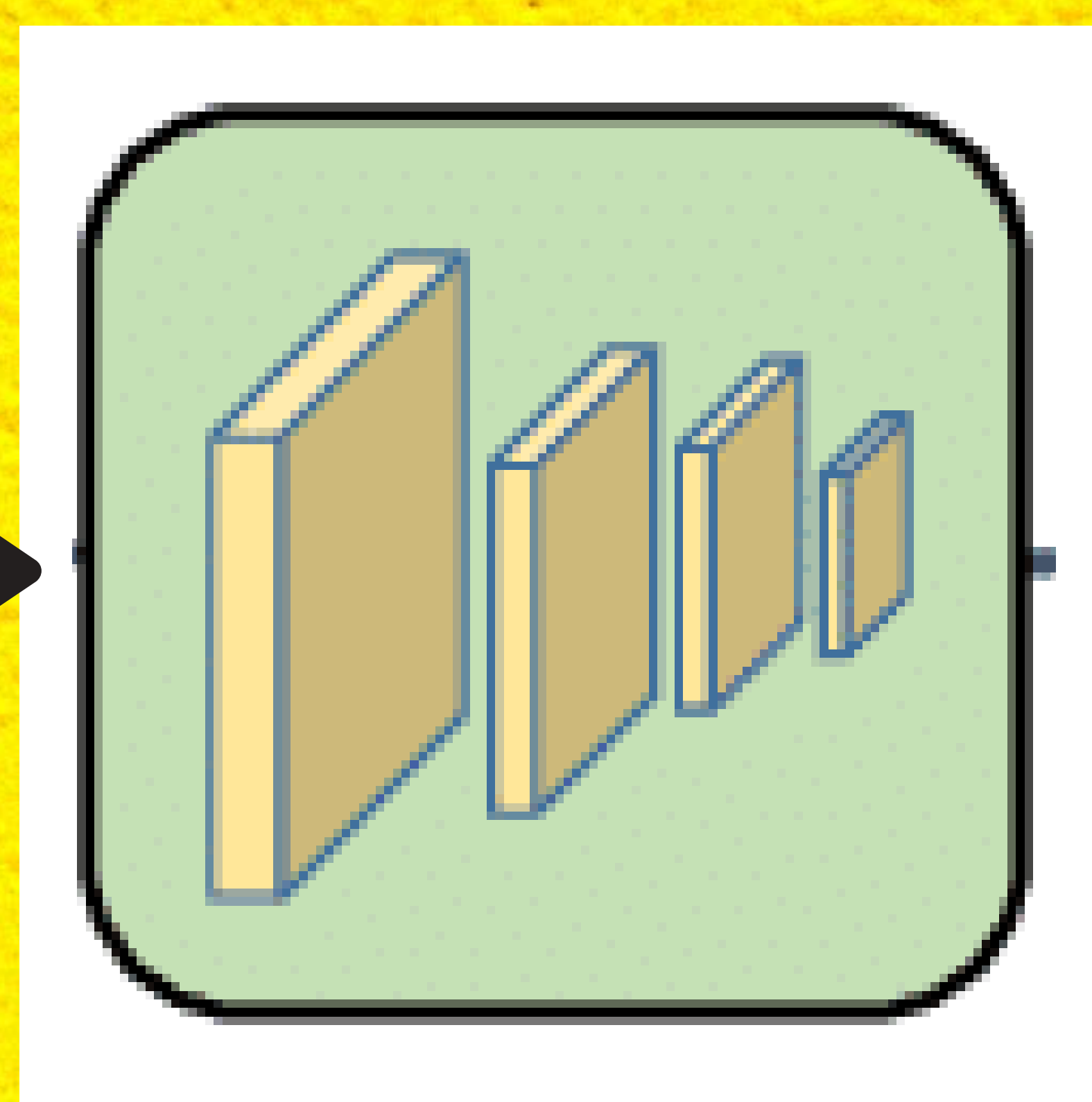
HOW DOES IT WORK?



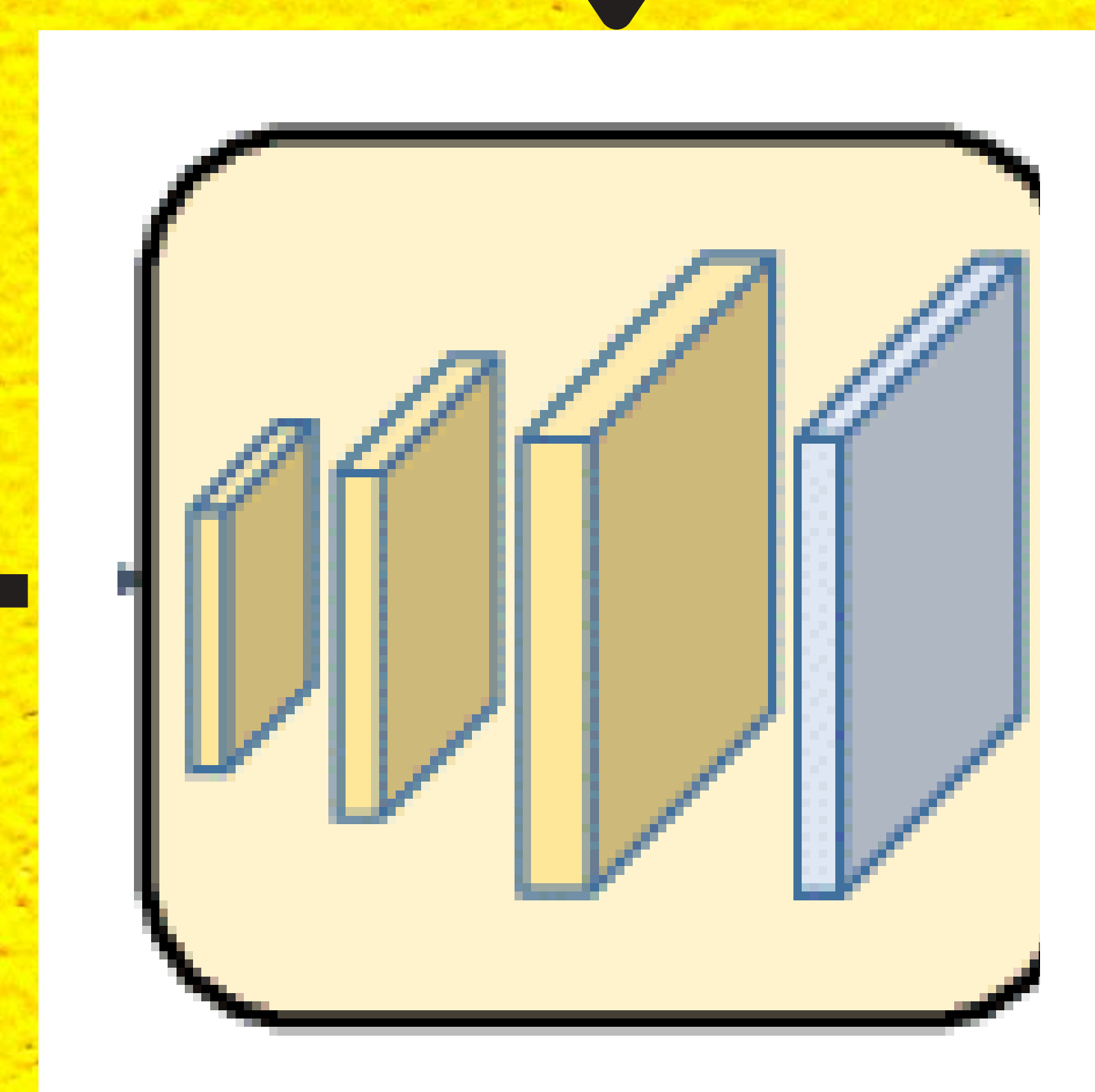
- Pose Estimation manipulates specific joints within the human body. These joints are known as “keypoints” within the pose estimation system.
- These models construct the keypoints and connecting levers through spatial arrangements between parts that allow for parameterization of the angles and joint position as vectors.
- The keypoints are typically labeled and connected at the end.



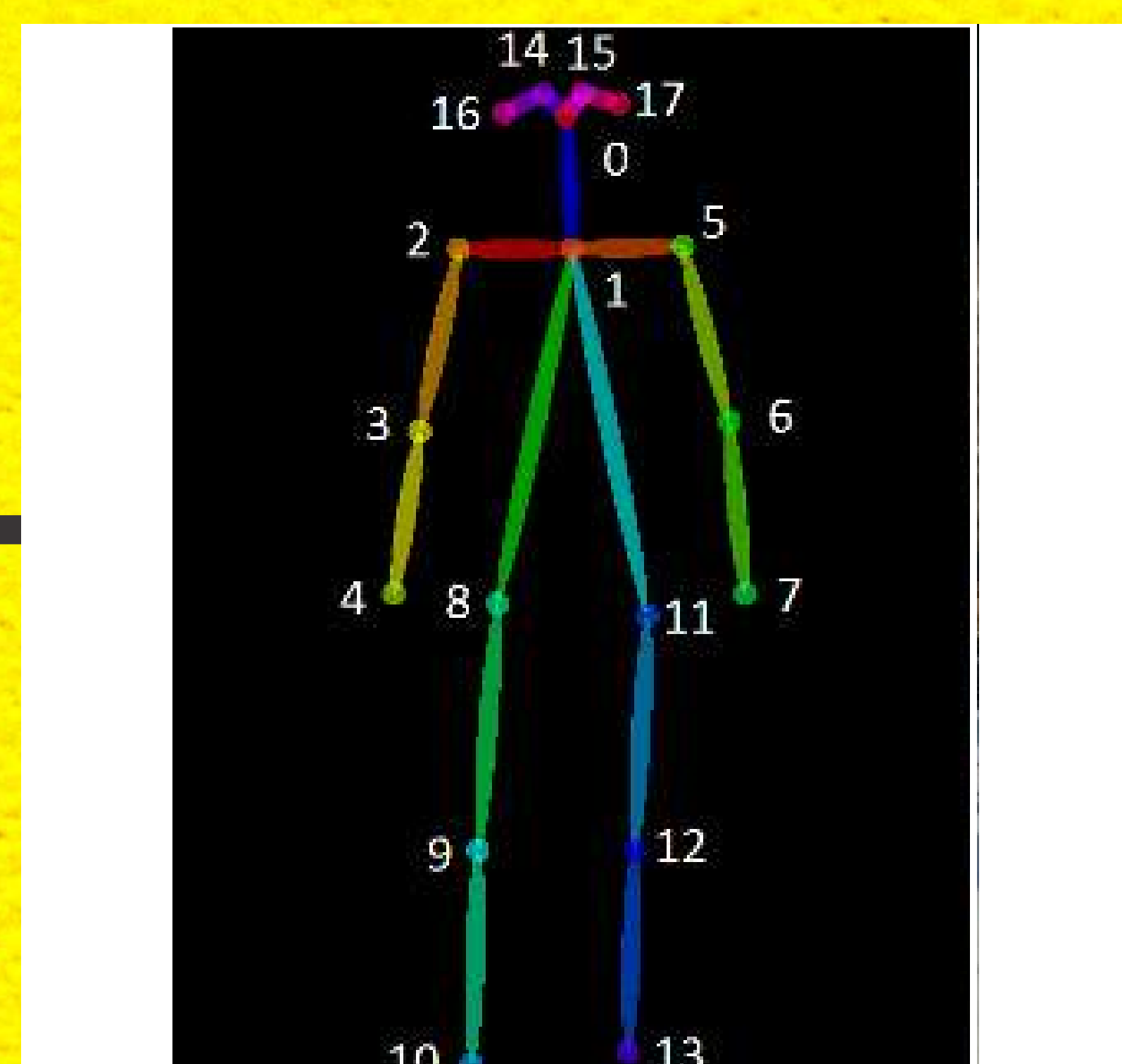
Input image



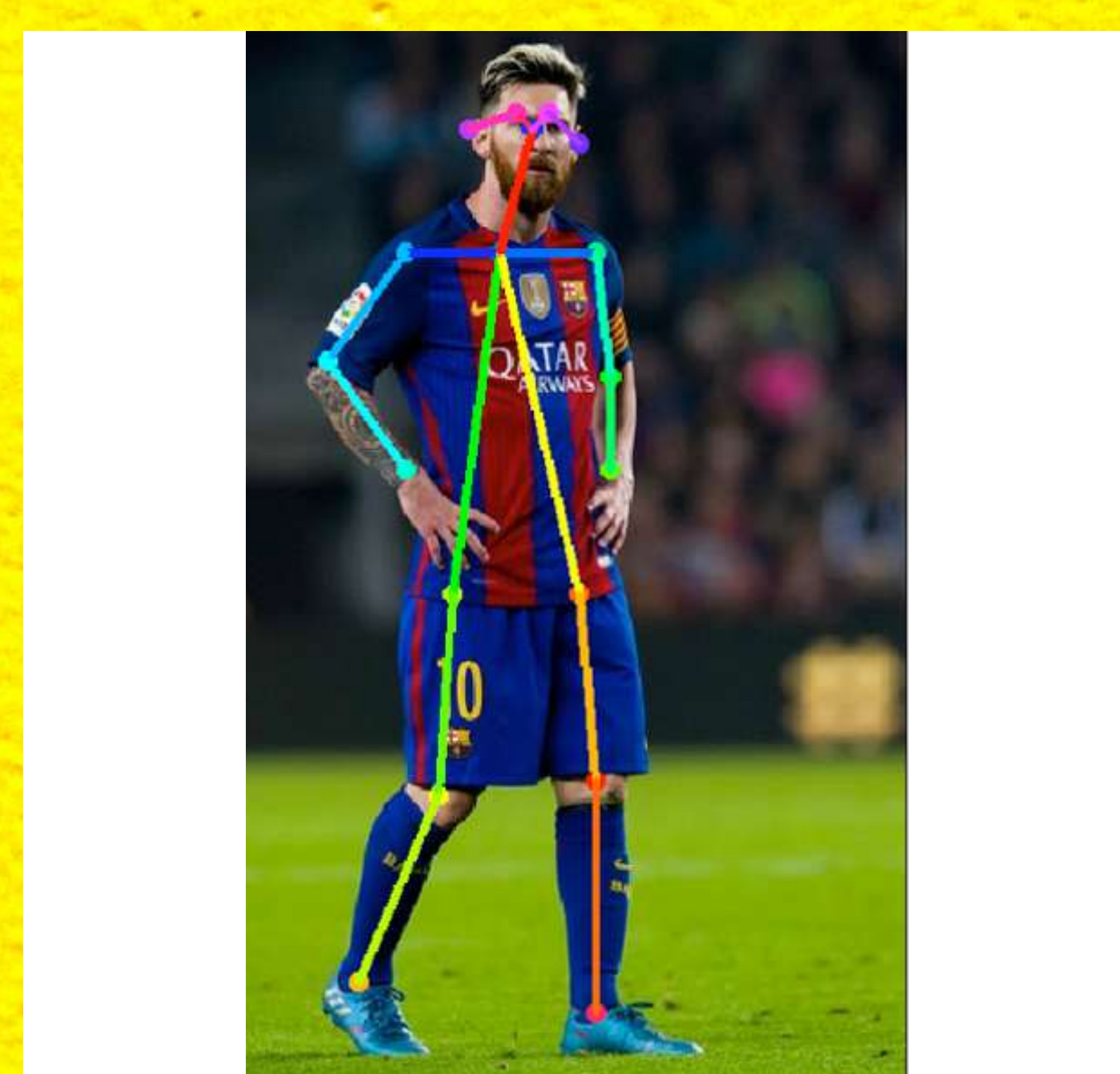
Feature extractor



Heat map generator



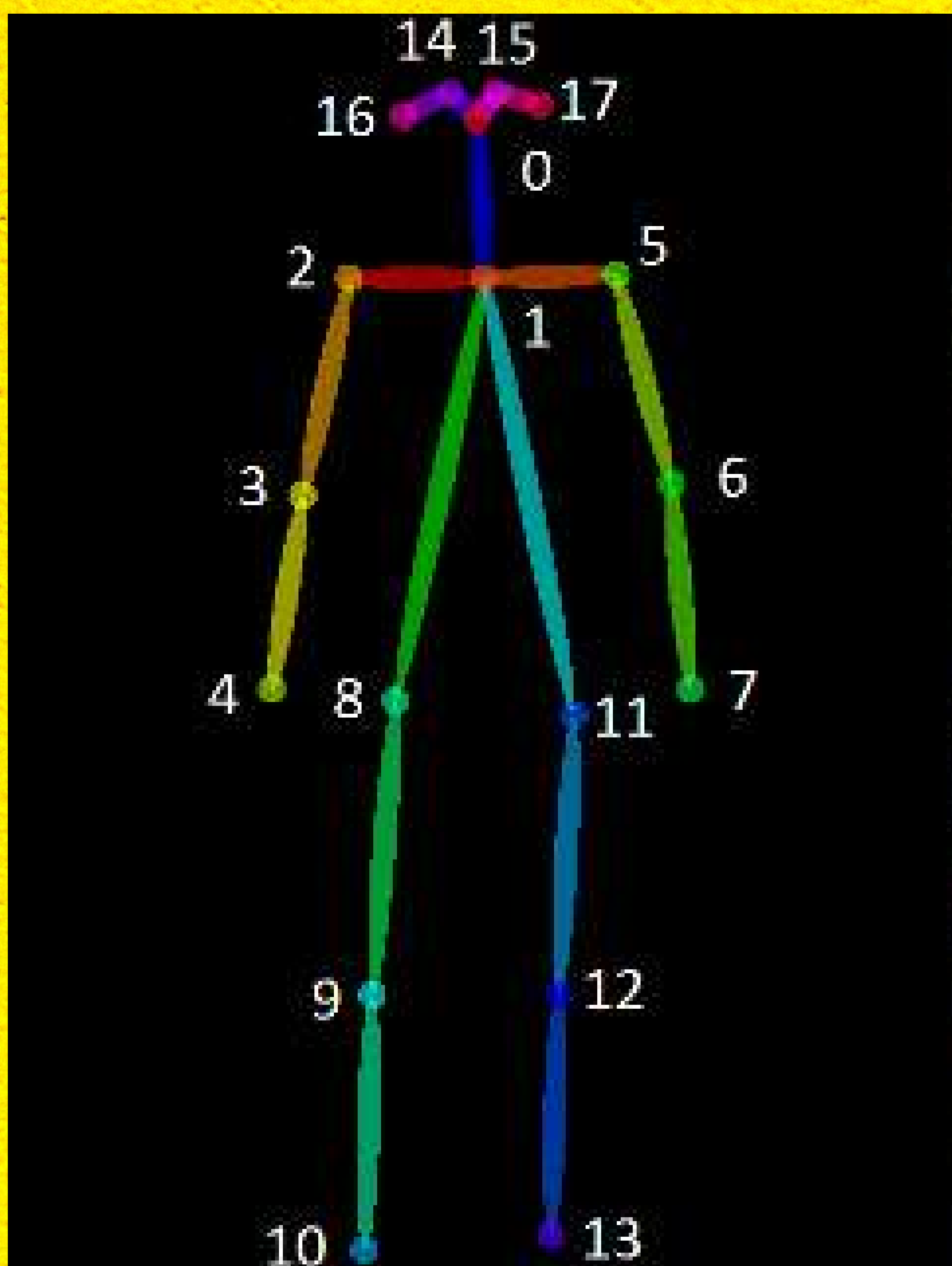
inference



Output image

Do what ever
you want with
inference

PROJECT FLOW

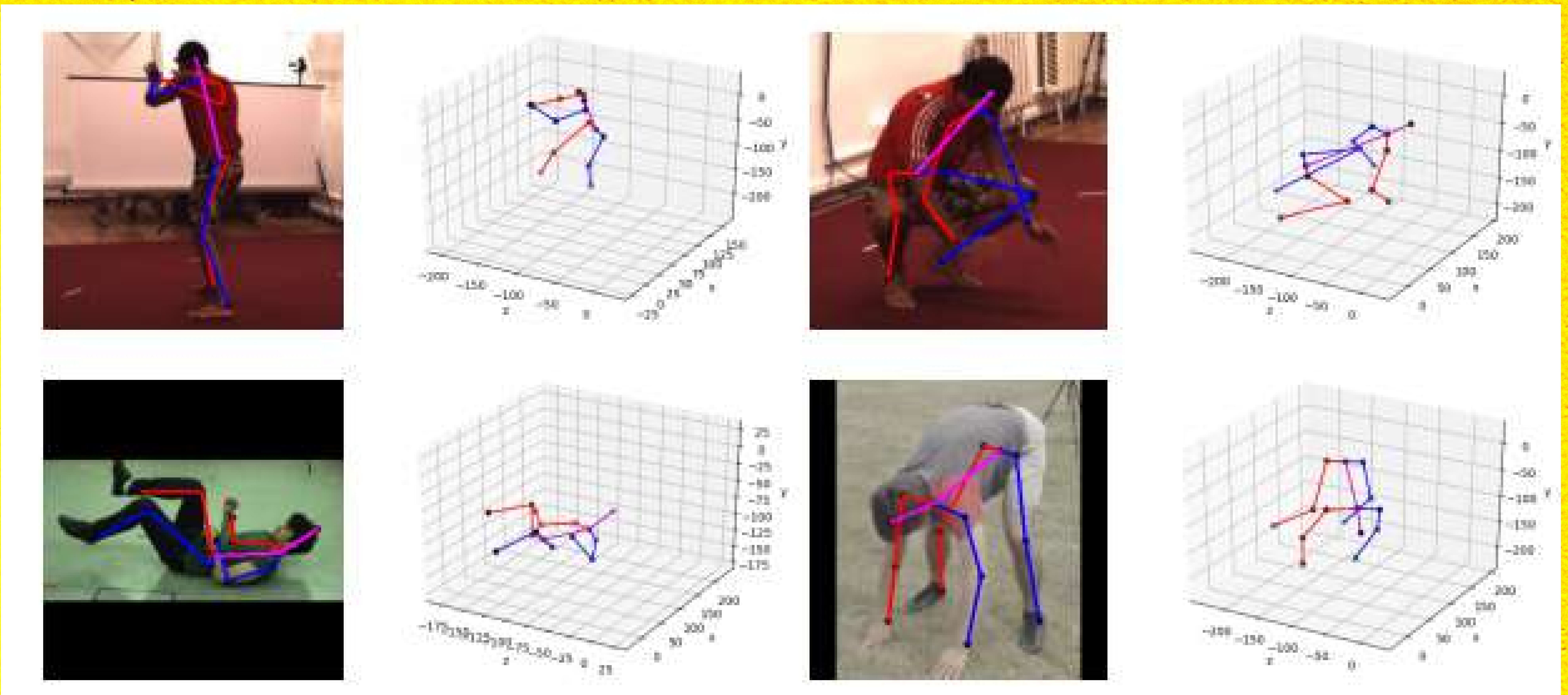


2D POSE ESTIMATION

- There are two major approaches of 2d pose estimation:
- Top-down: detect people first and execute a single-person pose estimation for all detections.
- Bottom-up: first detect body joints and then group them to get a person's pose.
- COCO and MPII datasets are mainly used for 2D benchmarks.

DEEP LEARNING METHODS FOR 2D

- ☐ OpenPose
- ☐ DeepPose
- ☐ MultiPoseNet
- ☐ AlphaPose
- ☐ VIBE
- ☐ DeeperCut
- ☐ Mask RCNN
- ☐ DeepCut
- ☐ Convolutional Pose Machines
- ☐ PoseNet



3D POSE ESTIMATION

- 3d pose estimation is the task of producing a 3D pose that matches the spatial position of the depicted person.
- It is a significantly more difficult problem than 2D Pose estimation. There are two approaches.
- First to estimate a 2D pose and then reconstruct a 3D pose. Or to regress a 3D pose directly.
- Multiple datasets like Mocap systems, Human3.6, Panoptic, Campus, Shelf Dataset etc.

DEEP LEARNING METHODS FOR 3D

- ☐ 3D Human Pose Estimation from Monocular Images with Deep Convolutional Neural Network
- ☐ 3D human pose estimation= 2D pose estimation + matching
- ☐ Towards 3D Human Pose Estimation in the Wild: a Weakly-supervised Approach
- ☐ A Simple Yet Effective Baseline for 3d Human Pose Estimation
- ☐ Integral Human Pose Regression
- ☐ Unsupervised Geometry-Aware Representation for 3D Human Pose Estimation



APPLICATIONS OF POSE ESTIMATION

- Human activity and movement

- Augmented reality experiences

- Animation & Gaming

- Robotics

- Motion Capture

- MANY MORE....

- Motion Tracking for Consoles

- Intelligent Driver Assist System

RESOURCES

CLICK THE LINKS TO GET RESOURCES

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- [Find all resources here](#)