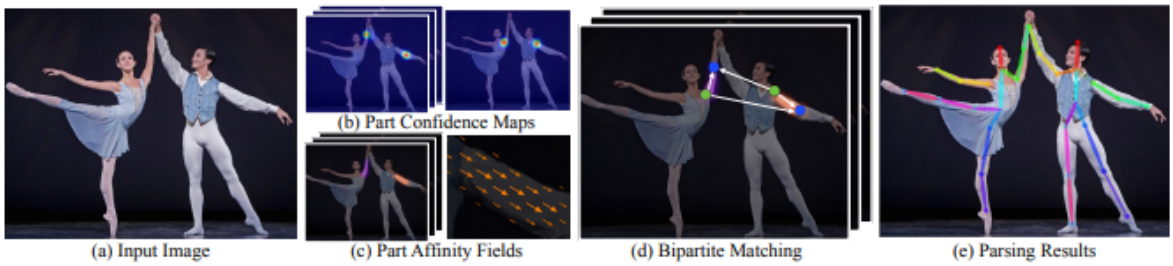
2、2. Human pose estimation

Source code path:/home/pi/yahboomcar_ws/src/yahboomcar_visual/detection

2.1. Overview

Human Posture Estimation estimates human posture by correctly connecting the detected key points of the human body in the picture. Key points of the human body usually correspond to joints with a certain degree of freedom on the human body, such as the neck, shoulders, elbows, wrists, waist, knees, ankles, etc., as shown in the figure below.

2.2. Principle



Input an image, extract features through the convolutional network, and obtain a set of feature maps, which are then divided into two branches, and the CNN network is used to extract Part Confidence Maps and Part Affinity Fields respectively;
After obtaining these two pieces of information, we use Bipartite Matching in graph theory to find the Part Association and connect the joint points of the same person. Due to the vector nature of PAF itself, the generated even matching is very correct and is finally merged. For the overall skeleton of a person;
Finally, find Multi-Person Parsing based on PAFs—>convert the Multi-person parsing problem into a graphs problem—>Hungarian Algorithm (Hungarian algorithm)
(The Hungarian algorithm is the most common algorithm for partial graph matching. The core of this algorithm is to find the augmenting path. It is an algorithm that uses the augmenting path to find the maximum matching of a bipartite graph.)

2.3. Start

```
cd /home/pi/yahboomcar_ws/src/yahboomcar_visual/detection
python target_detection.py
```

After clicking on the image box, use the keyboard [f] key to switch target detection.

```
if action == ord('f') or action == ord('F'):state = not state # Function
switching
```

Enter picture

Output picture