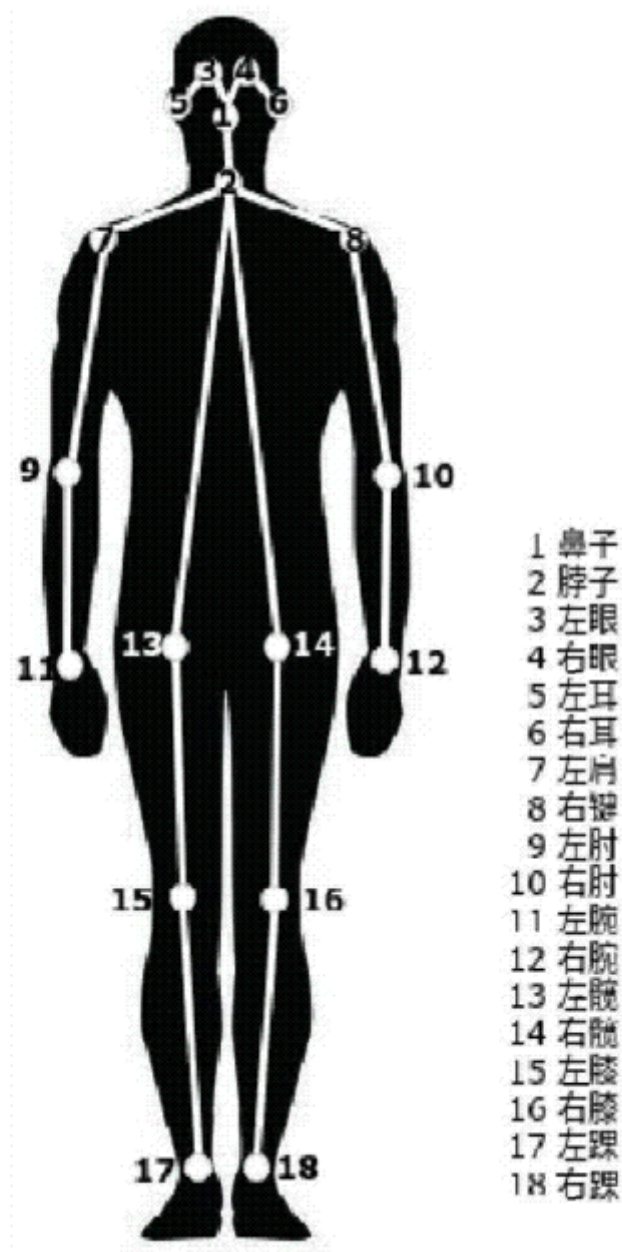


3. Opencv Application

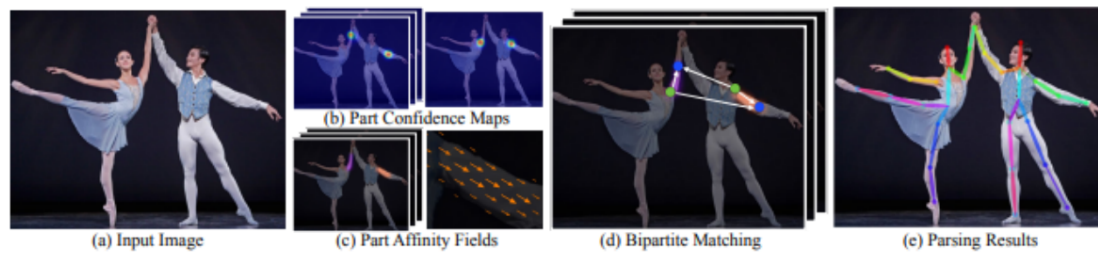
3.1. Human Posture Estimation

3.1.1. Overview

Human Posture Estimation is to estimate the human posture by correctly connecting the key points of the human body detected in the image. The key points of the human body usually correspond to the joints with a certain degree of freedom on the human body, such as the neck, shoulder, elbow, wrist, waist, knee, ankle, etc., as shown in the figure below.



3.1.2, Principle



Input an image, extract features through the convolutional network, get a set of feature maps, and then split into two branches, using the CNN network 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 Part Association, connects the joints of the same person. Due to the scalability of PAF itself, the generated pair matching is correct, and finally merged into the overall skeleton of a person;

Finally, based on PAFs, Multi-Person Parsing is solved—>Convert the Multi-person parsing problem into a graph problem—>Hungarian Algorithm

*Hungarian algorithm is the most common algorithm for partial graph matching. The core of the algorithm is to find augmenting paths. It is an algorithm that uses augmenting paths to find the maximum matching of bipartite graphs.

3.1.3, Start

Terminal input,

```
cd ~/orbbe_ws/src/astra_visual/detection
python target_detection.py
```

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

frame

FPS : 12

```
ord('f'):state = not state # 功能切换
```

