

# **InclusiveVidPose**

# **Annotation Manual**

**This manual describes the end-to-end process for annotating video frames in the InclusiveVidPose dataset. All annotators must follow these guidelines to ensure high-quality, consistent, and ethically compliant labels of 25 keypoints and person segmentation masks.**

# **Annotator Training Overview**

Before labeling real data, complete the following modules:

- Anatomy of Limb Deficiencies
- Temporal & Occlusion Disambiguation
- Ethics & Privacy Protocols

# Upper Limb Prosthetic Types



1. **Cosmetic Prosthetics**
  - the most difficult to recognize and distinguish between real and prosthetic limbs



2. **Body-Powered Prosthetics**



3. **Myoelectric Prosthetics**



4. **Advanced Bionic Arms**

# Lower Limb Prosthetic Types



1. Basic Prosthetic Legs



2. Athletic Prosthetics

- Varies depending on the sports
- Running blades

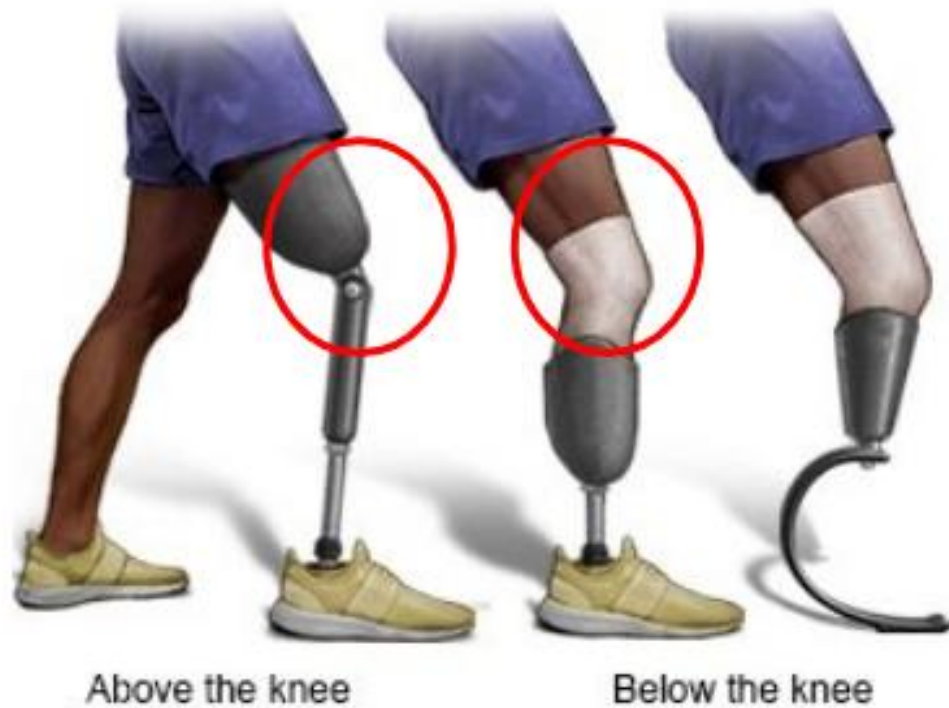


3. Athletic Prosthetics

- Cycling - no feet in some cases.

# Limb Prosthetic -

“Above the knee” or “Below the knee” - Same for upper limbs



Lower limb prosthetic **appearance difference** between the “above the knee” and “below the knee”



What we are looking for is the **Joint** or **Knee** as circled



# Determination of Natural Joints

- The presence or absence of a natural joint can usually be determined by looking at the prosthetic. Comparing the socket to their opposite natural joints to determine if they have a natural knee.
- So in the photo next, the joint is below the opposite meaning he has a natural knee.



# Determination of Natural Joints - IPC Videos


- The IPC videos have athletes with their classification determined.
- Referring to the World Para Athletics Classification Rules and Regulations February 2023, the different classes could reflect the presence of their natural joints.
- Link  
[[https://www.paralympic.org/sites/default/files/2024-07/2023\\_02\\_17%20WPA%20Classification%20Rules%20and%20Regulations\\_Edition%20February%202023\\_Final%20%282%29.pdf](https://www.paralympic.org/sites/default/files/2024-07/2023_02_17%20WPA%20Classification%20Rules%20and%20Regulations_Edition%20February%202023_Final%20%282%29.pdf)]



# Determination of Natural Joints - IPC Videos

- More examples

◀ Athletics T63 (T42/63) ▶




▶ LEXI: How it Works

T63 is for runners with movement moderately affected in one leg or the absence of limbs above the knee.  
All have difficulty accelerating out of the blocks and maintaining an even stride pattern.

🇫🇷 Athletics T63 (T42/63) is a competition class at the Paris 2024 Paralympics

◀ Athletics T64 (T44/62/64) ▶



▶ LEXI: How it Works

T64 is for athletes with movement moderately affected in one lower leg or the absence of one or both legs below the knee.  
They have difficulty accelerating evenly out of the blocks and maintaining an even stride, particularly in the drive phase of the race.

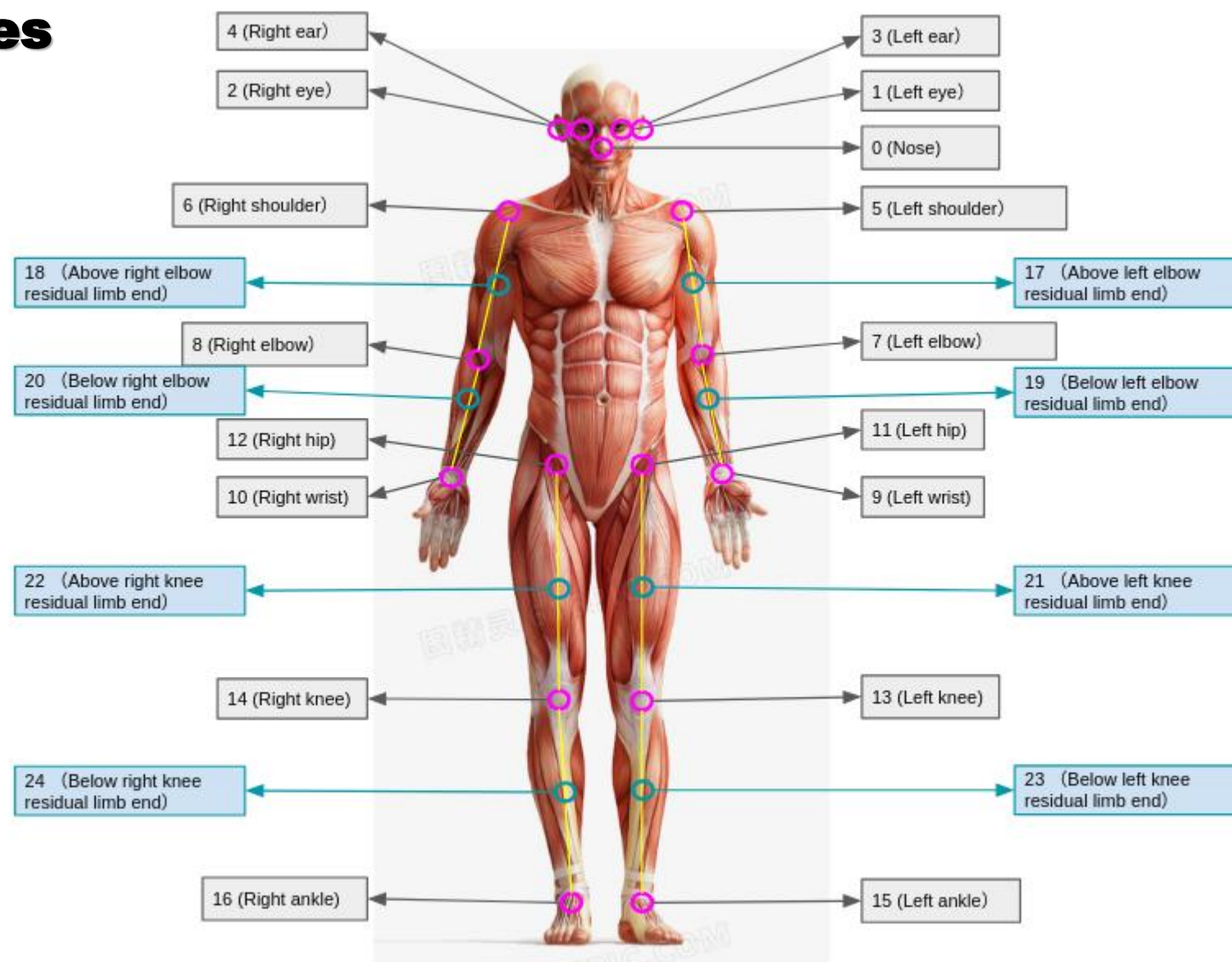
🇫🇷 Athletics T64 (T44/62/64) is a competition class at the Paris 2024 Paralympics



# Annotation Guidelines

## Keypoint Definitions

- Standard COCO 17 Joints (IDs 0–16)
- Residual-Limb Endpoints (IDs 17–24)



# Temporal & Occlusion Disambiguation

## Types of Missing Keypoints

- Transient Occlusion
  - Limb briefly hidden (e.g., behind objects or other body parts)
  - Reappears in adjacent frames
- True Absence (Amputation)
  - Permanently missing limb segment
  - Consistently absent across all frames

## Temporal Cues

- Frame Context: Inspect preceding/following frames for re-emergence
- Motion Consistency: Track expected trajectory; sudden disappearance suggests occlusion

# How to Label

We also follow the COCO dataset format rules (Link: <https://cocodataset.org/#format-data>) . We have three labels when you are annotating, (0, 1, 2), where

- 0 means not visible and not being labelled as well (like all the lower body keypoints are not in the image or person who doesn't have natural joints) **ABSENT KEYPOINTS**;
- 1 means there is a potential keypoint not visible but we can label it (suitable for the cases that we know there is a residual limb end below left knee) **OCCLUDED KEYPOINTS**;
- 2 means the points are clearly visible and being labelled.

# Frame-by-Frame Workflow

1. Load Frame
2. Place Keypoints + Visibility
3. Load Segmentation Mask from open-source platform X-AnyLabeling together with Segment Anything 2.
4. Adjust Segmentation Mask
5. Assign & Verify Tracking ID
6. Save & Flag Uncertainties





# Quality Control

## 1. Personalized Keypoint Schema

- **Goal:** Tailor 25-point mask per subject (17 COCO + 8 residual-limb)
- **Team:** 2 senior annotators + 1 para-athletics classifier
- **Exercise:** Review sample profiles → assign mask values (e.g., right-ankle = 0, right-knee = 1)

## 2. Agreement Sampling & Evaluation

- **Goal:** Quantify inter-annotator consistency
- **Procedure:**
  - Randomly sample 5% of frames per batch
  - Two annotators review independently
  - “Agreement” = no obvious placement errors
- **Threshold:**  $\geq 80\%$  of sampled points must agree

# Quality Control

## 3. Batch Correction Workflow

- **Trigger:** > 20% of sampled points fail agreement threshold
- **Action:** Original annotator re-annotates entire batch
- **Verification:** Senior reviewer audits corrected batch



Thank you for contributing to a high-quality, inclusive dataset that will advance fair and robust pose-estimation research.