OPTIMAL CROP-OUT FOR PHOTOGRAPHING PEOPLE DURING SPORTING ACTIVITIES

author: Anastasiia Lebedenko

supervisor: prof. Ing. Adam Herout, PhD.

BRNO FACULTY UNIVERSITY OF INFORMATION OF TECHNOLOGY TECHNOLOGY

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DETECTOR + CROP ALGORITHMS, EXPERIMENTS = OPTIMAL CROP

Figure 1: MediaPipe Pose segmentation mask or YOLO detector are used to calculate the bounding box around the person's body. Body landmarks are used in body parts crop (Figure 5).
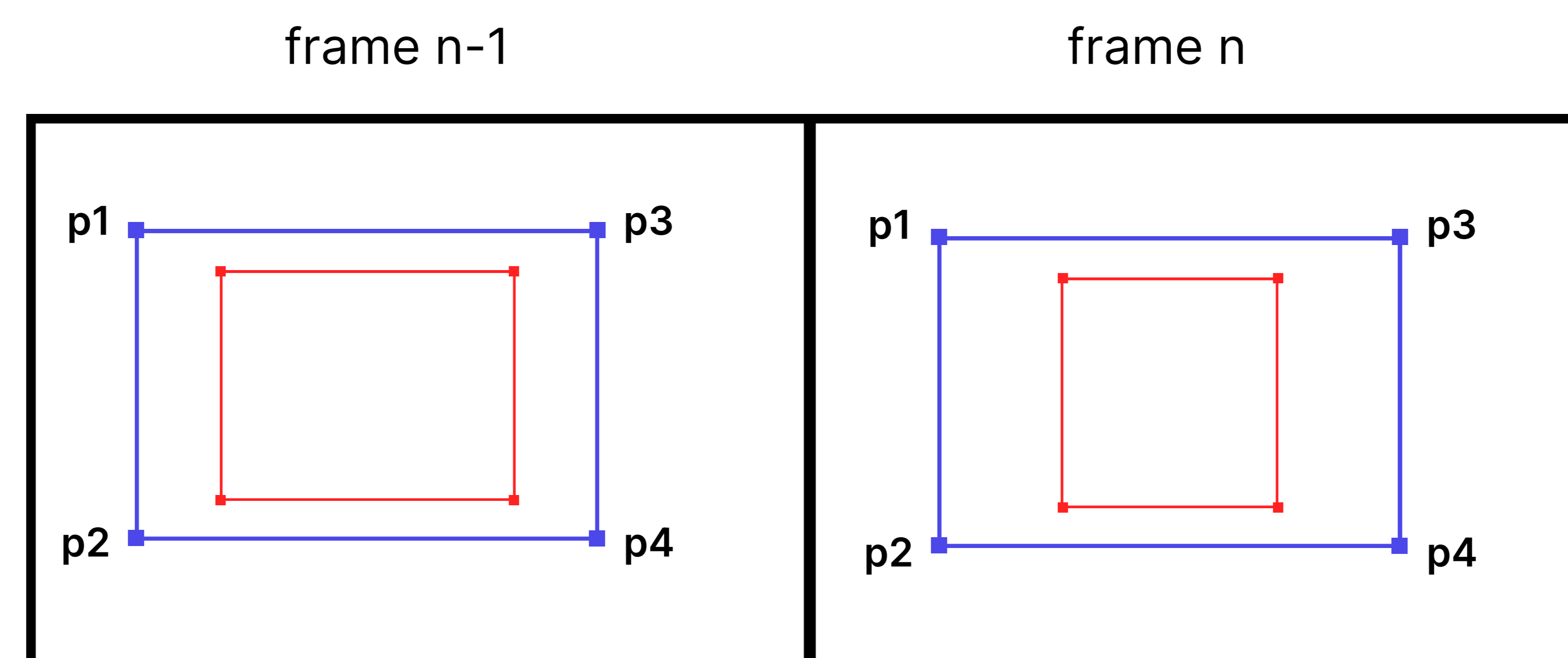

Figure 2: A crop-out box for each frame is calculated based on the centre of the bounding box.
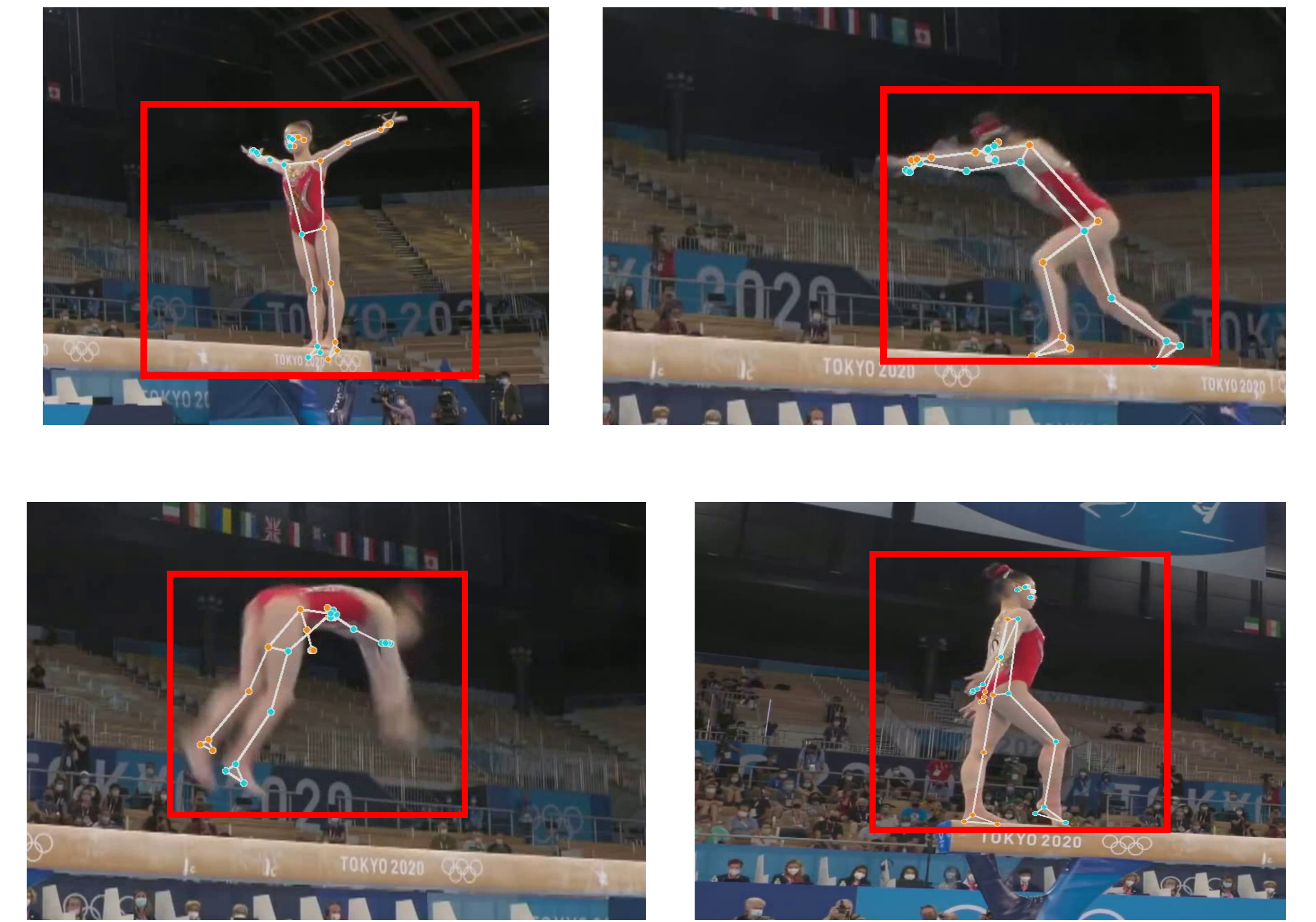

Figure 3: In the cropped video, the person occupies most of the space and is centered within the frame.

CROP MODE - HORIZONTAL, DYNAMIC OR FIXED?

The work explores what kinds of crop settings are most suitable for which kinds of sports. Based on the normalized ranges of bounding boxes' values, it is possible to predict what kind of crop setting should be applied.

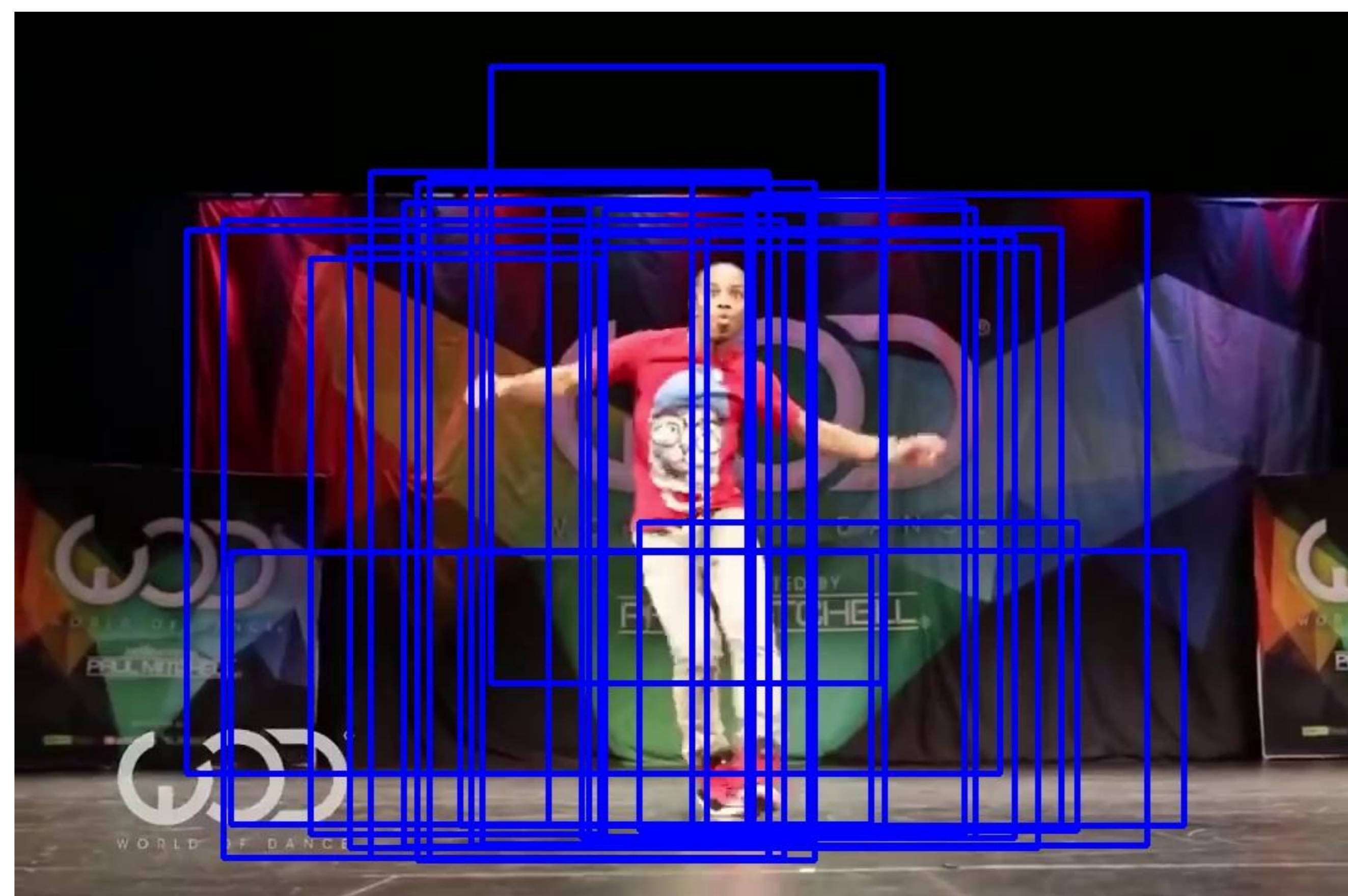**Figure 4:** Walking on a slack-line. Horizontal movement.

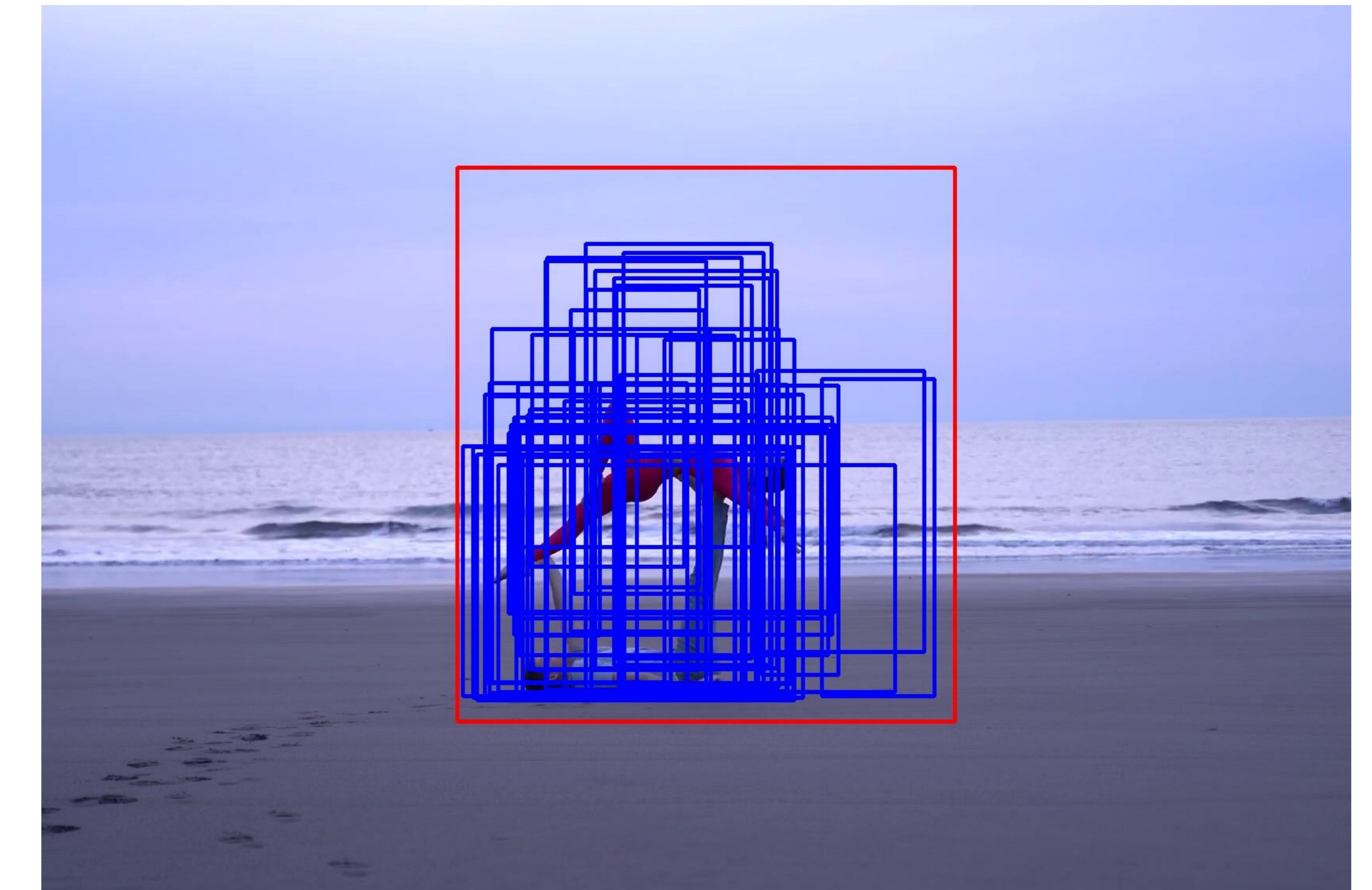**Figure 5:** Dancing. Dynamic movement in both horizontal and vertical directions.

Figure 6: Acro Yoga. The movement is concentrated within a specific area of the frame, making it suitable for a fixed crop mode.
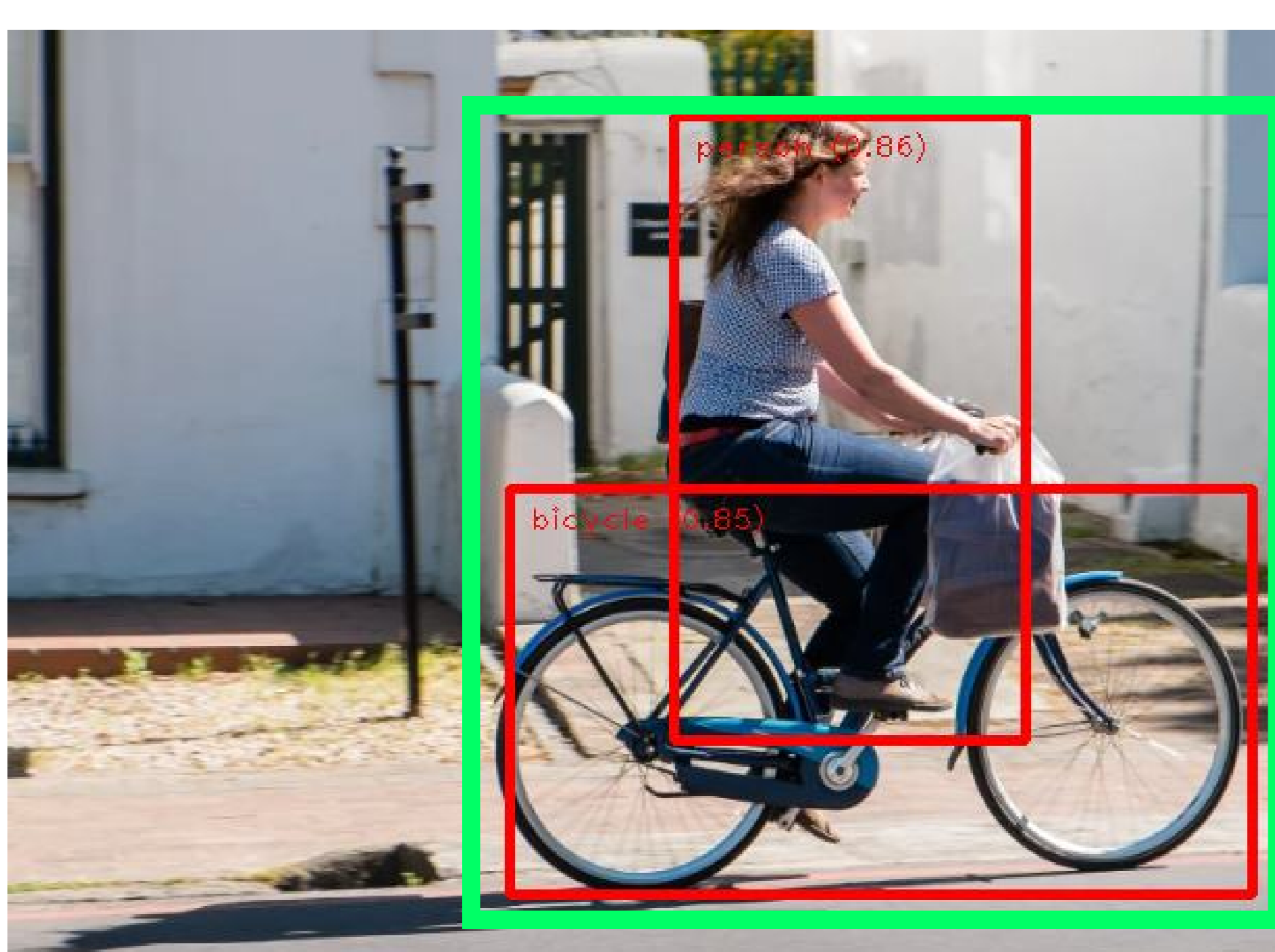
CROP CONFIGURATIONS

Figure 7: Cycling. For sports involving equipment, MediaPipe Object Detector is used with the human detector to calculate a joint bounding box.
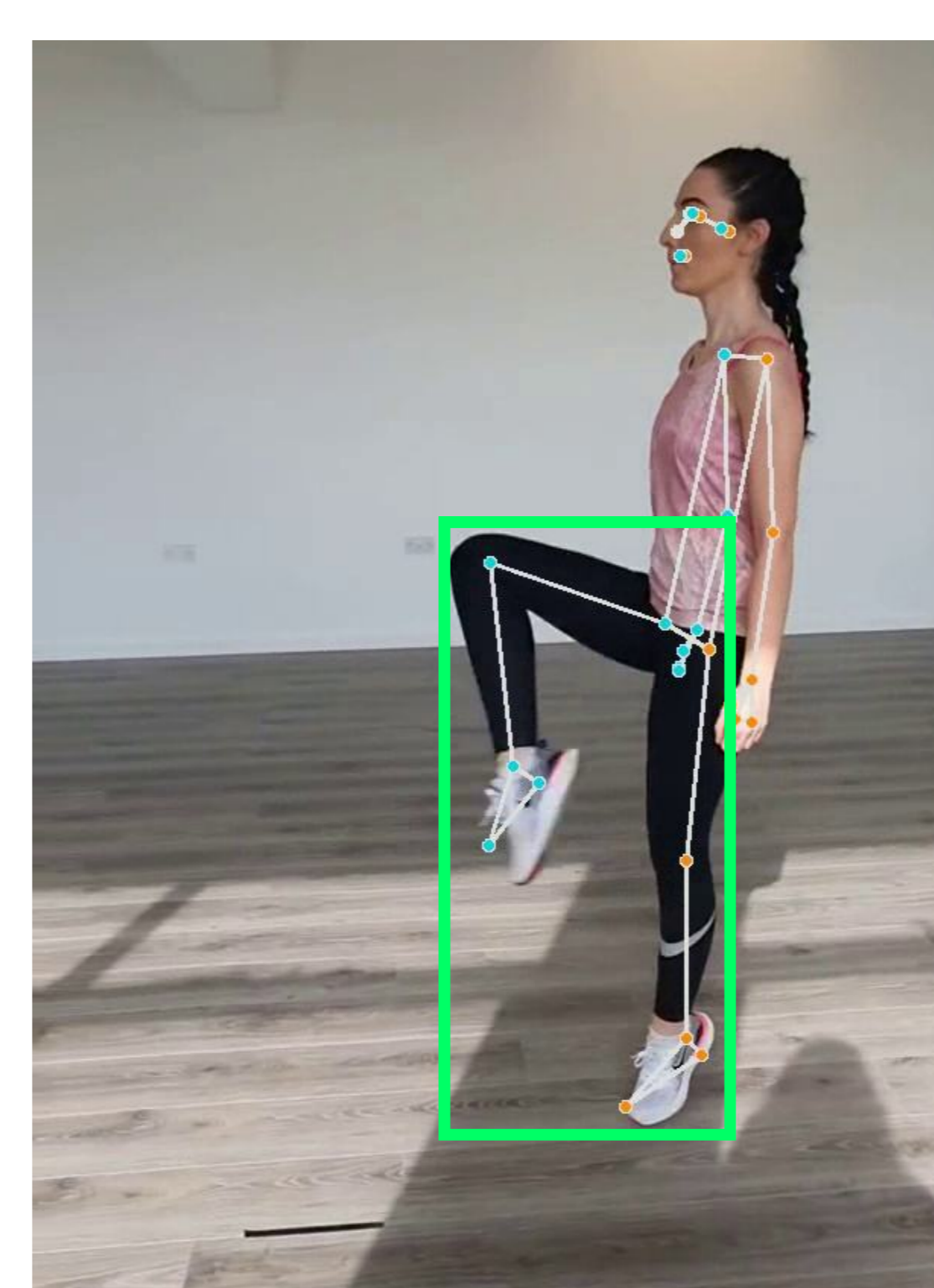

Figure 8: Irish dancing. Depending on chosen body configuration, bounding box may be calculated based on select group of body landmarks.
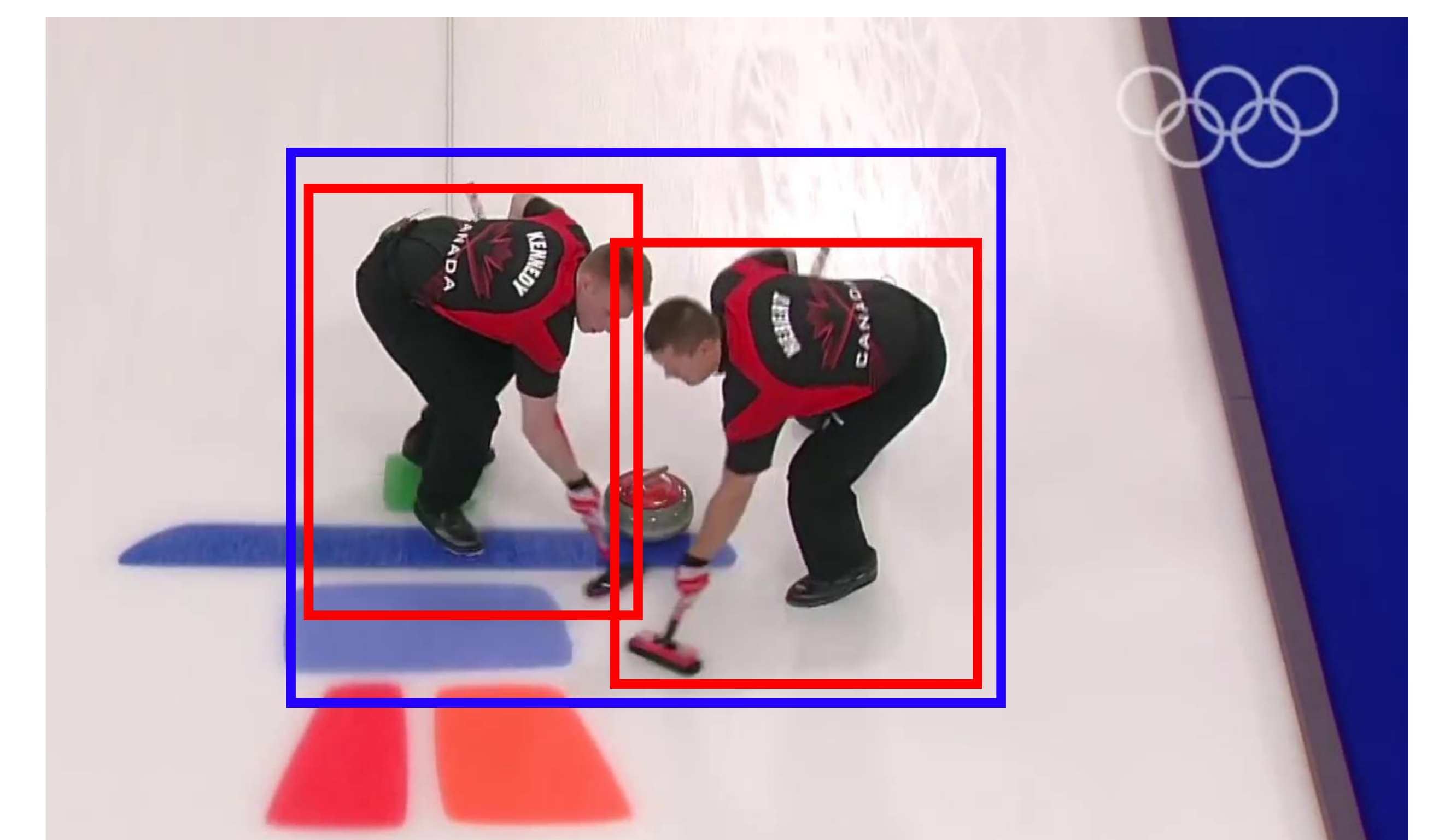

Figure 9: Curling. Multi-person crop mode determines the bounding box by calculating the collective area of all detected humans.