1. Bài báo NCKH

- RMPE: Regional Multi-Person Pose Estimation
  (Nhận dạng tư thế của nhiều người theo vùng)
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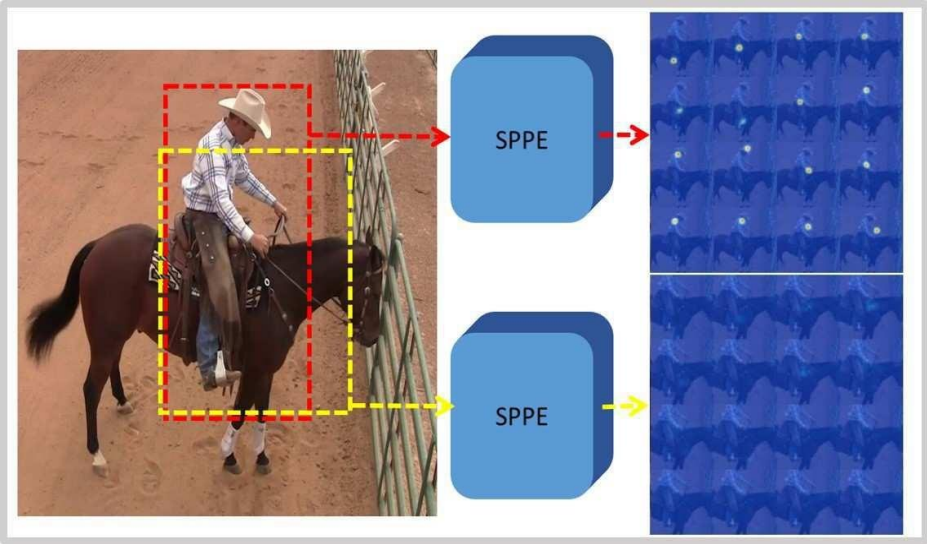
2. Bài toán là gì

Multi-person pose estimation in the wild is challenging. Although st ate-of-the-art human detectors have demon-strated good perform ance, small errors in localization and recognition are inevitable. Th ese errors can cause failures for a single-person pose estimator (SP PE), especially for methods that solely depend on human detection results. In this paper, we propose a novel regional multi-person pos e estimation (RMPE) framework to facilitate pose estimation in the presence of inaccurate human bounding boxes

To illustrate the problems of previous approaches, we applied the state-of-the-art object detector Faster-RCNN [29] and the SPPE Stacked Hourglass mod- el [23]. Figure 1 and Figure 2 show two major problems: the localiza tion error problem and the redundant detection problem.

3. Vấn đề 1



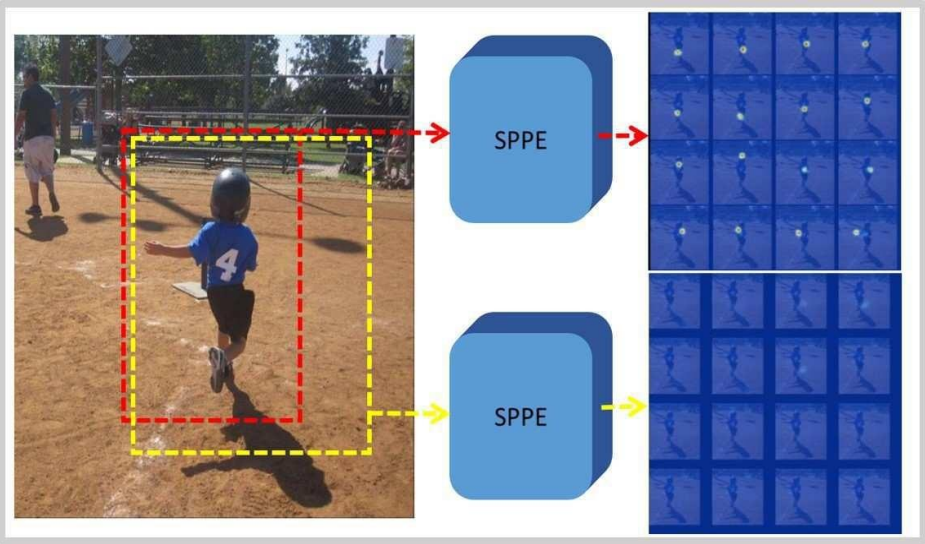


Figure 1. Problem of bounding box localization errors. The red boxes are the ground truth bo unding boxes, and the yellow boxes are detected bounding boxes with *IoU* > 0.5. The heatm aps are the outputs of SPPE [23] corresponding to the two types of boxes. The correspondin g body parts are not detected in the heatmaps of the yellow boxes. Note that with *IoU* > 0.5, the yellow boxes are considered as "correct" detections. However, human poses are not det ected even with the "correct" bounding boxes.

3. Vấn đề 2

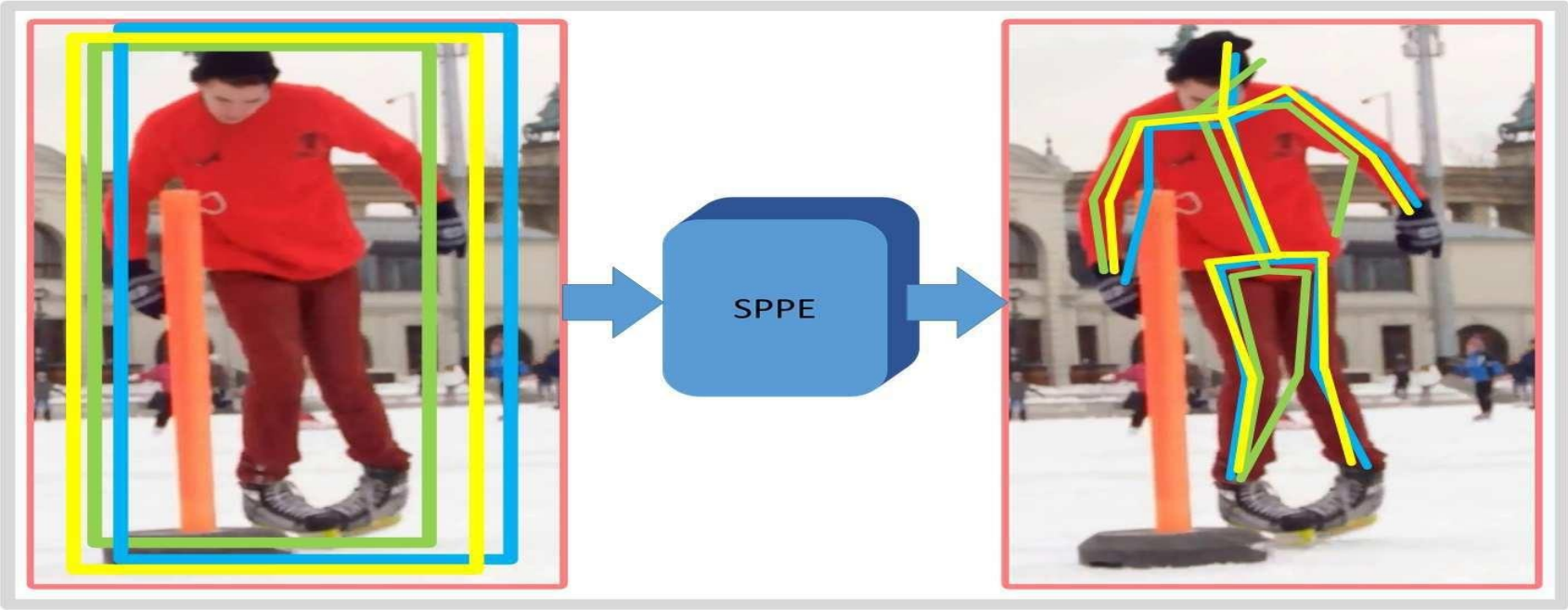
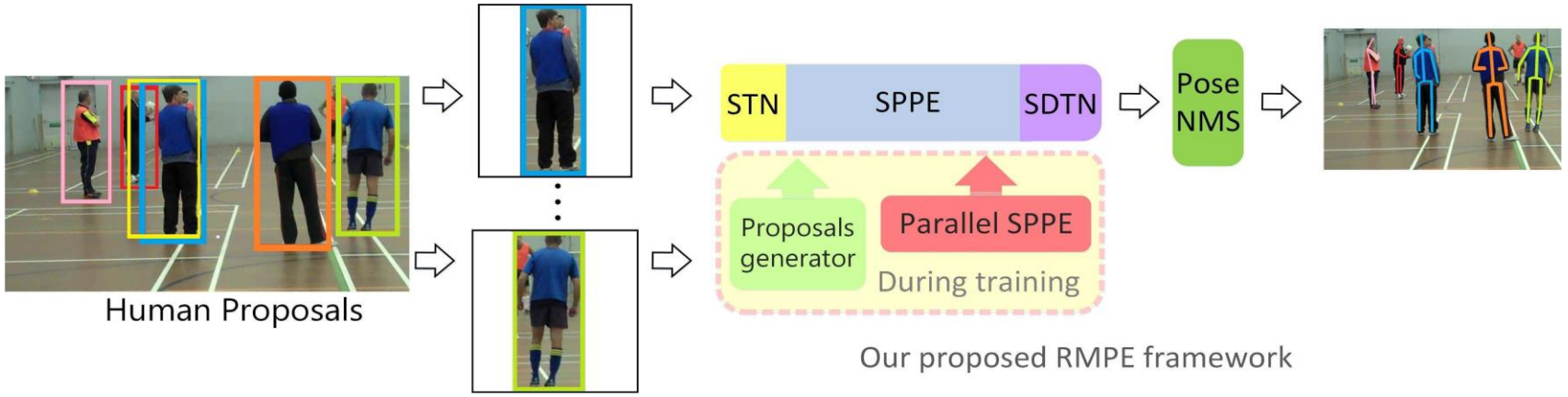


Figure 2. Problem of redundant human detections. The left image shows the detected b ounding boxes; the right image shows the es- timated human poses. Because each boun ding box is operated on independently, multiple poses are detected for a single person.

4. Ý tưởng giải quyết



To address the problem of bounding box localization error, We have designed a new sym metric spatial transformer network (SSTN) which is at tached to the SPPE to extract a high-quality single person region from an inaccurate bounding box. (Figure 1)

To address the problem of redundant detection, a parametric pose NMS is introduced. O ur parametric pose NMS eliminates redundant poses by using a novel pose distance metri c to compare pose similarity. A data-driven approach is applied to optimize the pose dista nce parameters.

The End.