

Supplementary Material —Heterogeneous Multi-task Learning for Human Pose Estimation with Deep Convolutional Neural Network

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- Regression results: The estimation results of regression network on the subset of Buffy test set where the upper body was detected correctly. The estimations of HMLPE-RPJ-L (tune) are represented by green sticks. The red sticks are the ground-truth labeling.

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- Detection results: The body part and joint point detection results on the subset of Buffy test set where the upper body was detected correctly. The network HMLPE-RPJ (tune) is used for generating the indicator map for all the body parts and joints at each location.

The center of final detection window for i -th body part or joint point is calculated by

$$x_i^*, y_i^* = \underset{x,y}{argmax} \sum_{l=1} \mathcal{N}(\mathbf{u}_l - (x, y), \Sigma) P_{i,l} \quad (1)$$

where \mathbf{u}_l is the center for l -th detection window, $P_{i,l}$ is the detection output for i -th body part or joint point at l -th window, Σ is a diagonal matrix with square of window size on the diagonal.

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- Pose estimation with joint point detection: For joint point detection task, we use the center of predicted bounding box of each joint-point as its location and refer this method as HMLPE-RPJ (tune) JD.

method	LLA	RLA	LA	LUA	RUA	UA	Avg
HMLPE-RPJ (tune)	65.16	59.18	62.17	94.76	92.13	93.45	77.81
HMLPE-RPJ (tune) JD	61.80	57.68	59.74	92.51	91.01	91.76	75.75
DFMP (Yang and Ramanan 2013)	-	-	57.5	-	-	94.3	75.9

Table: PCP with joint point detection result

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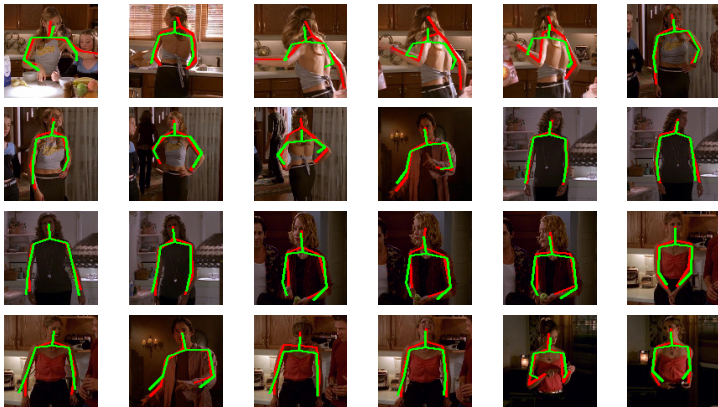
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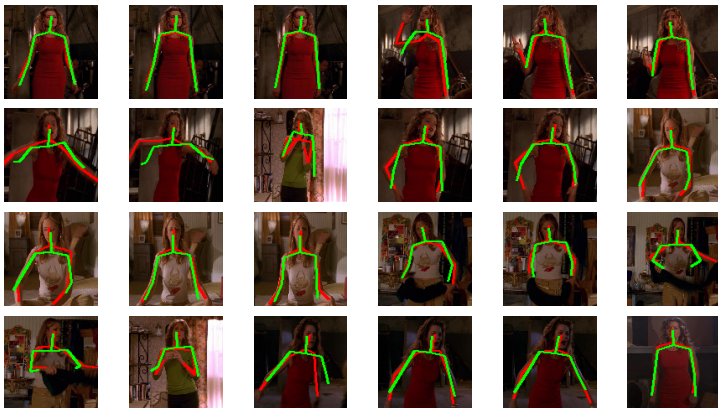
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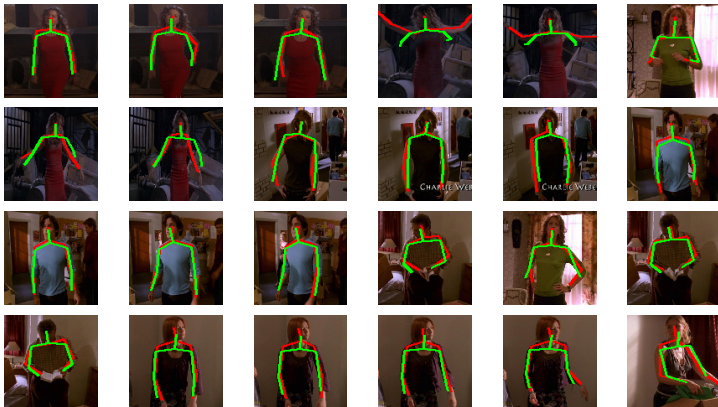
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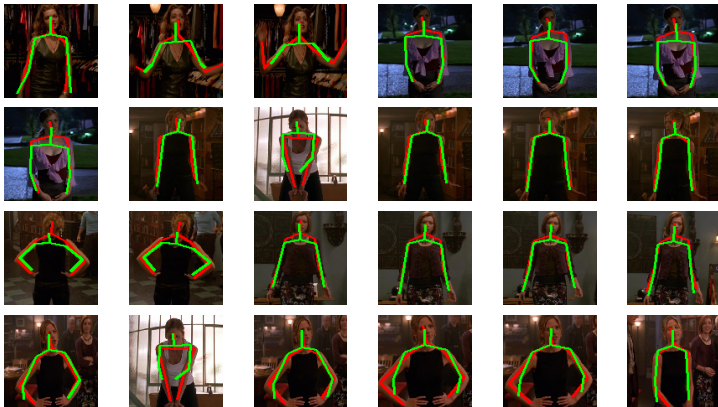
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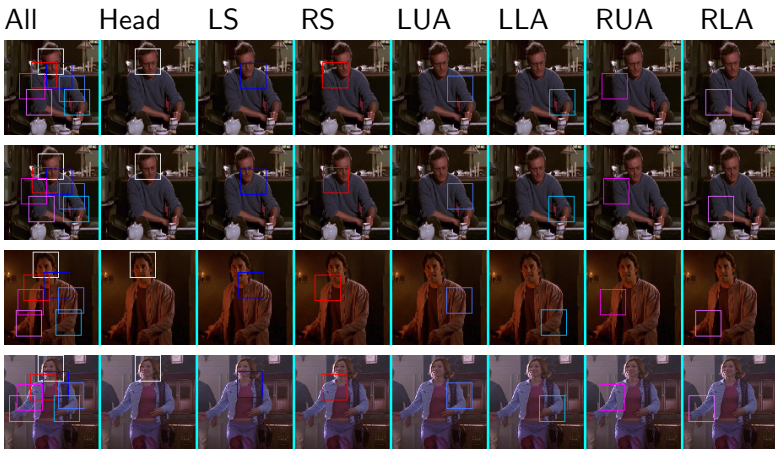
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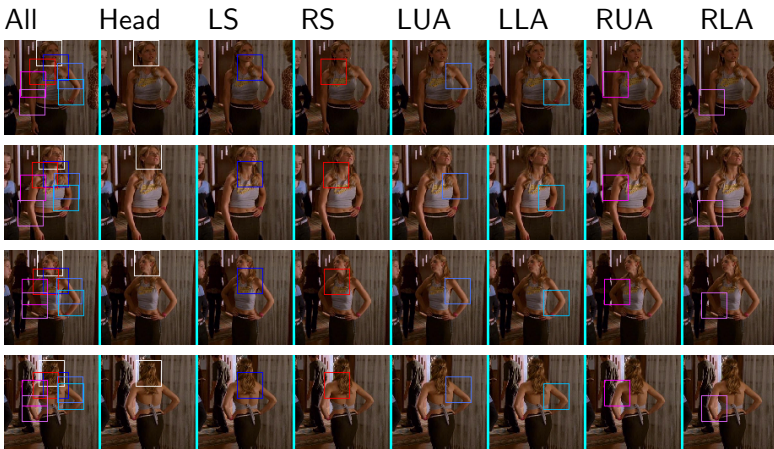
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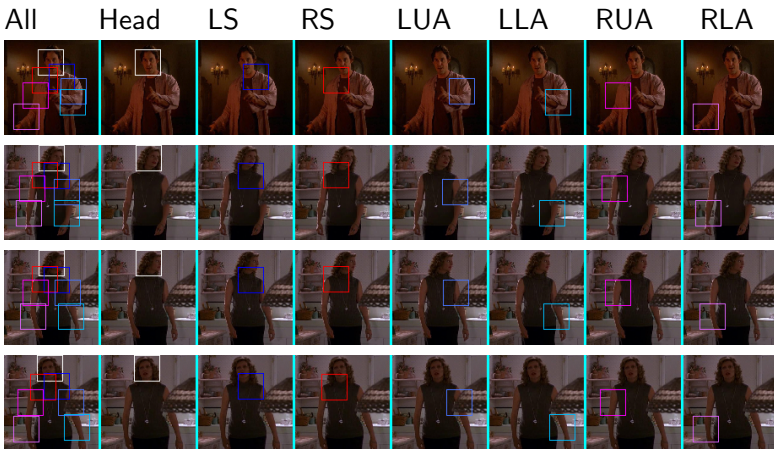
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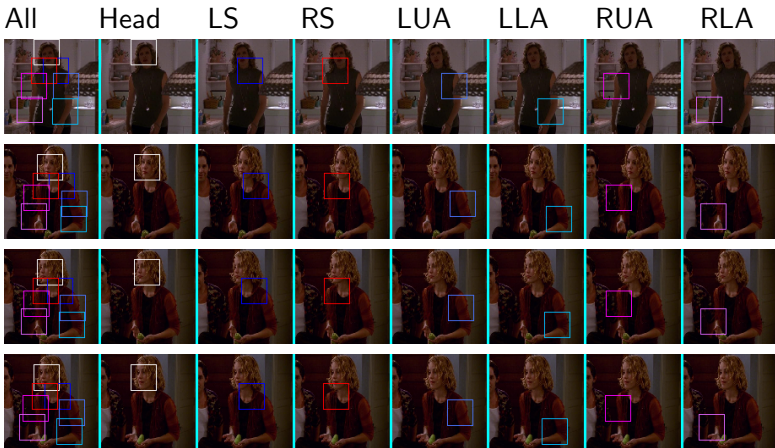
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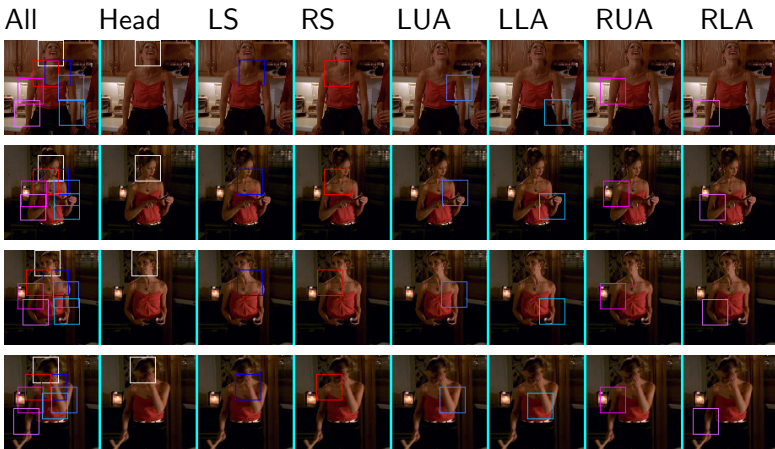
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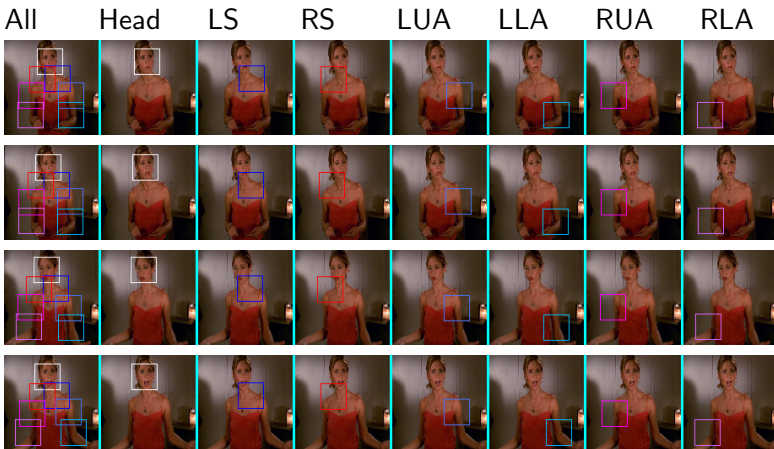
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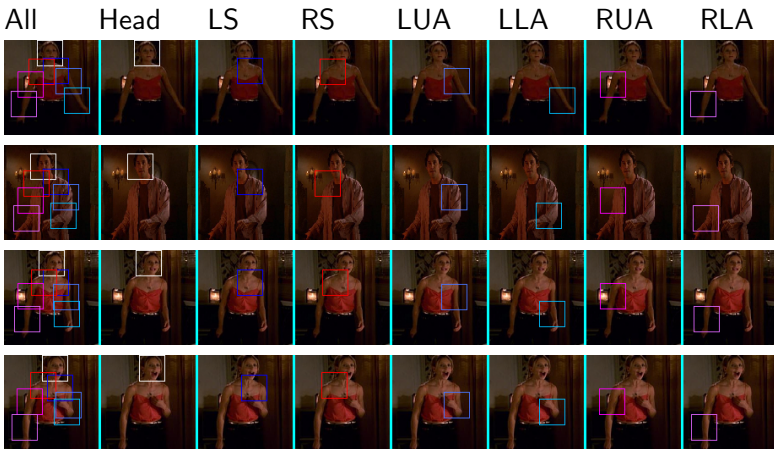
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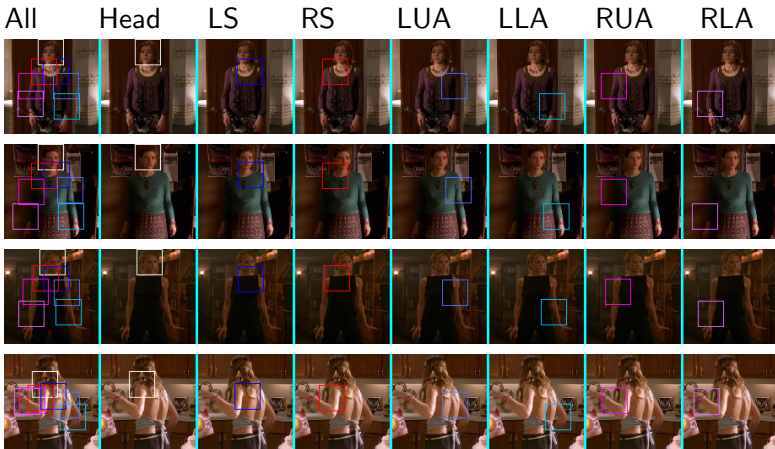
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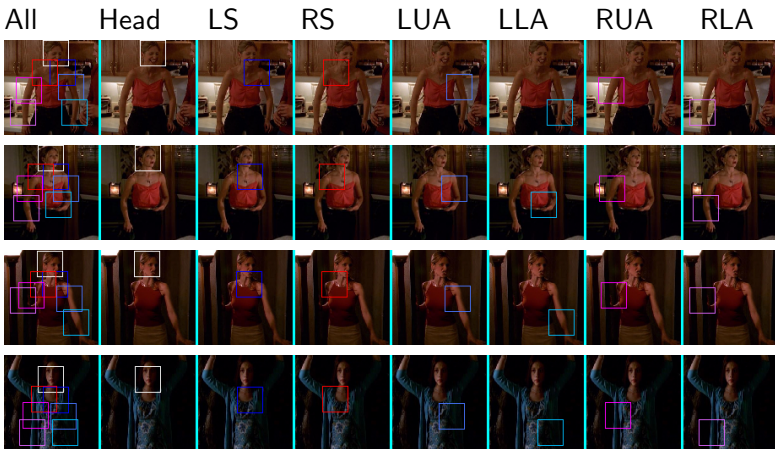
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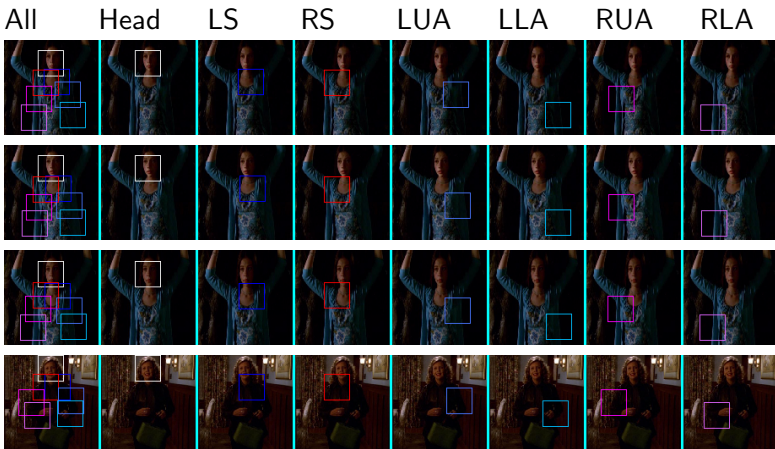
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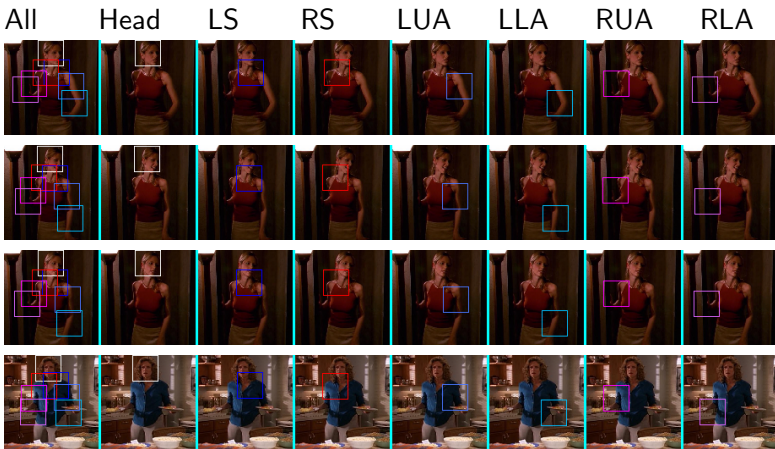
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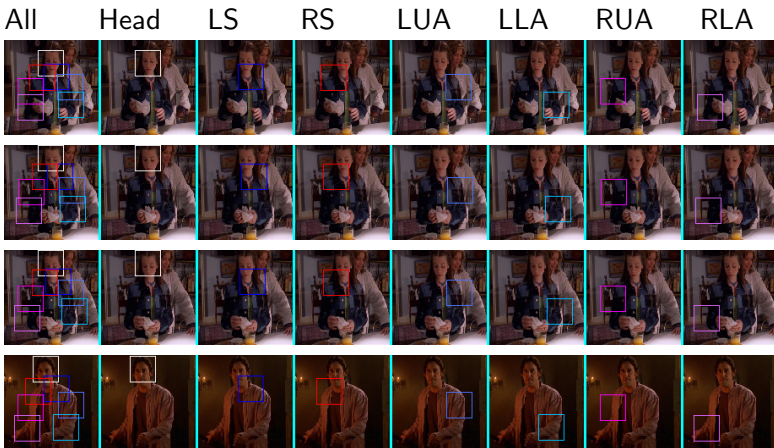
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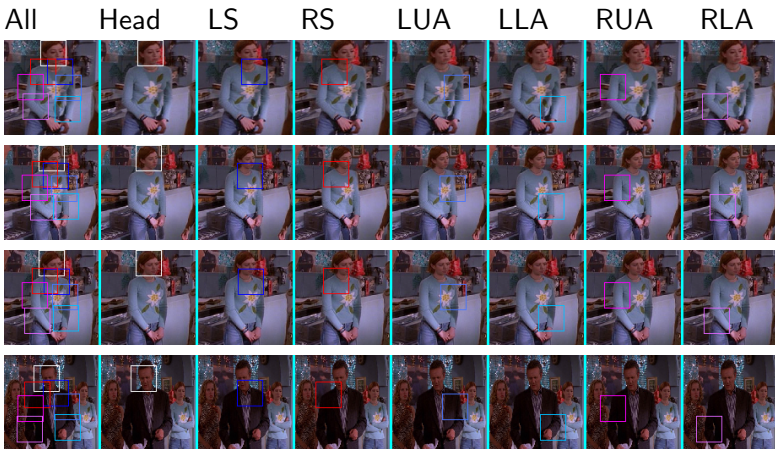
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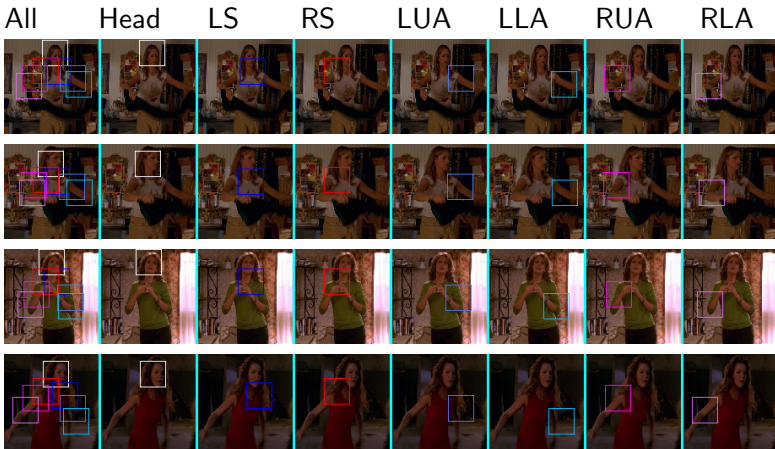
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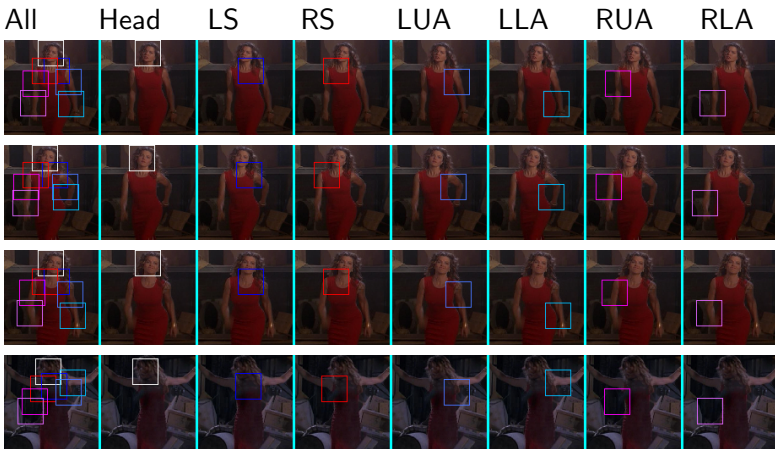
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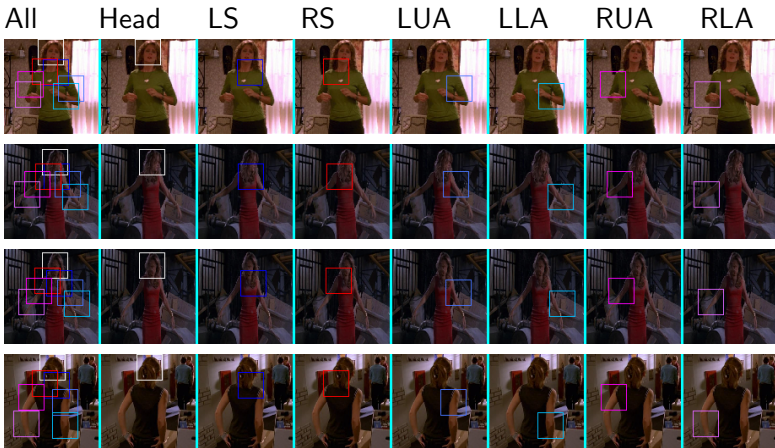
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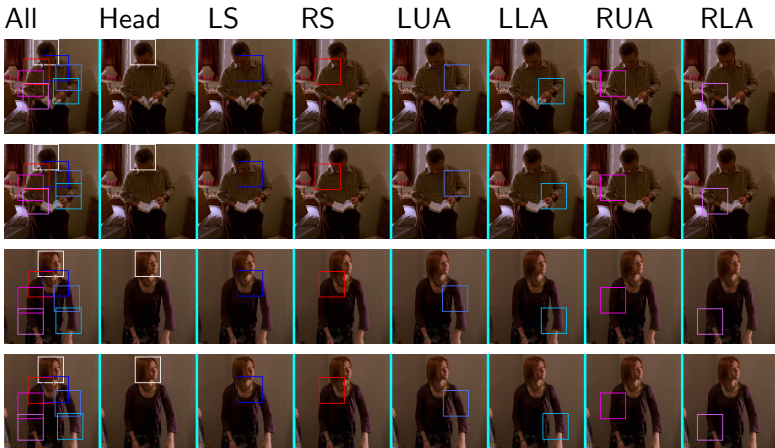
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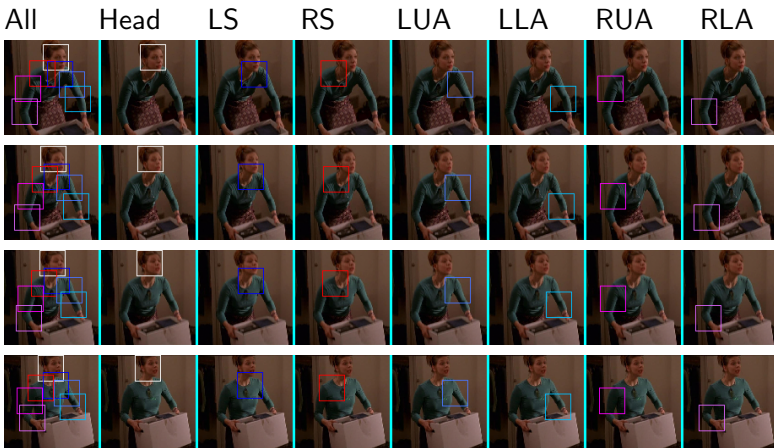
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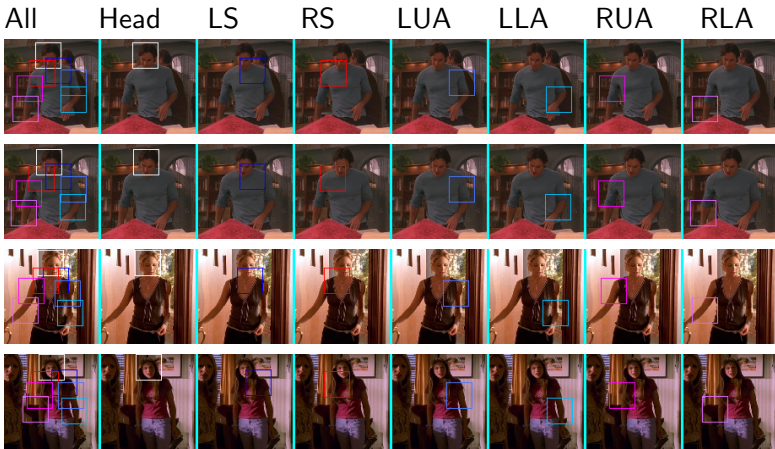
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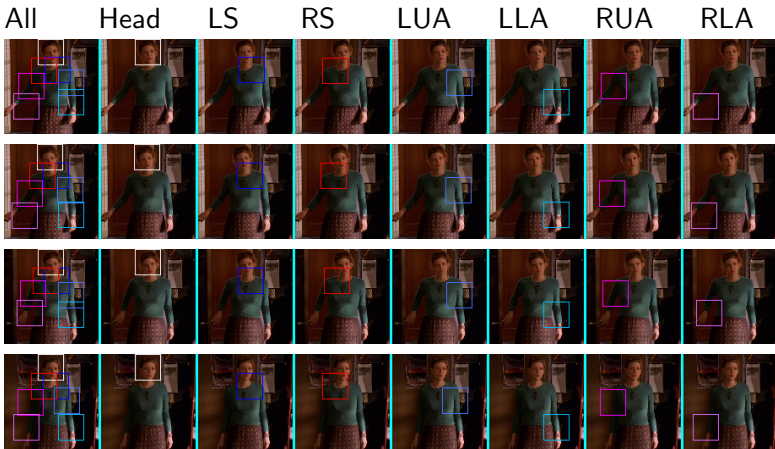
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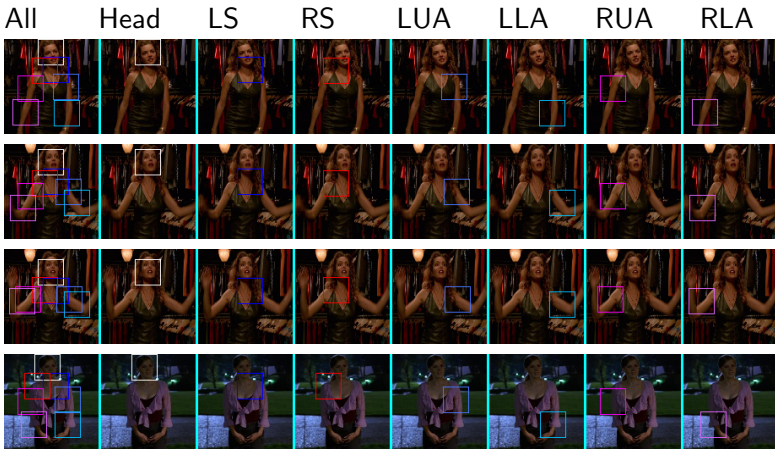
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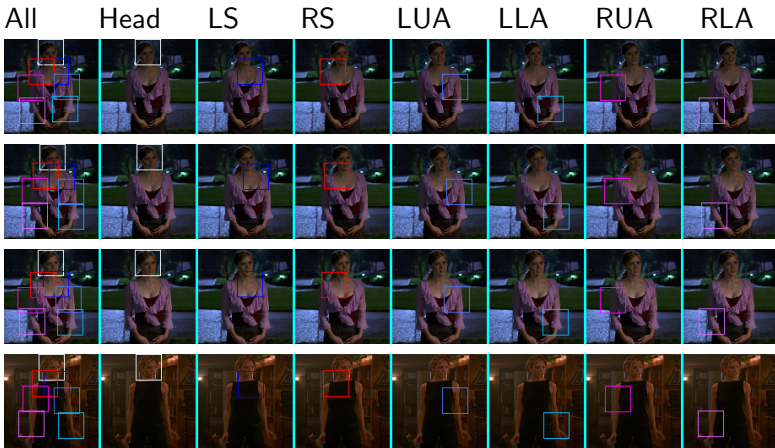
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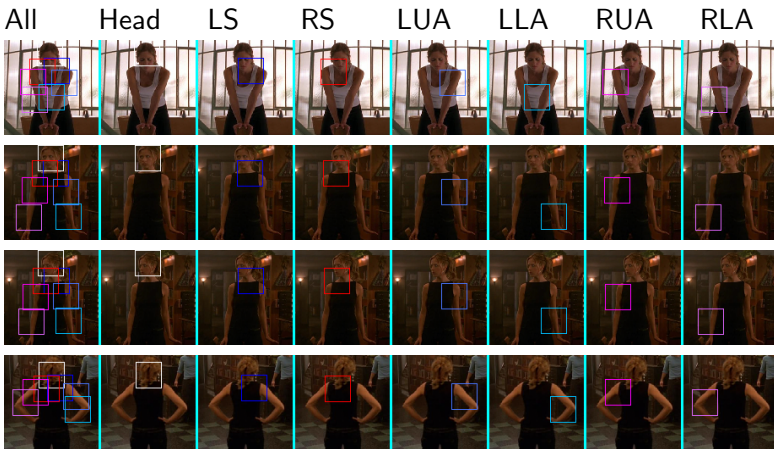
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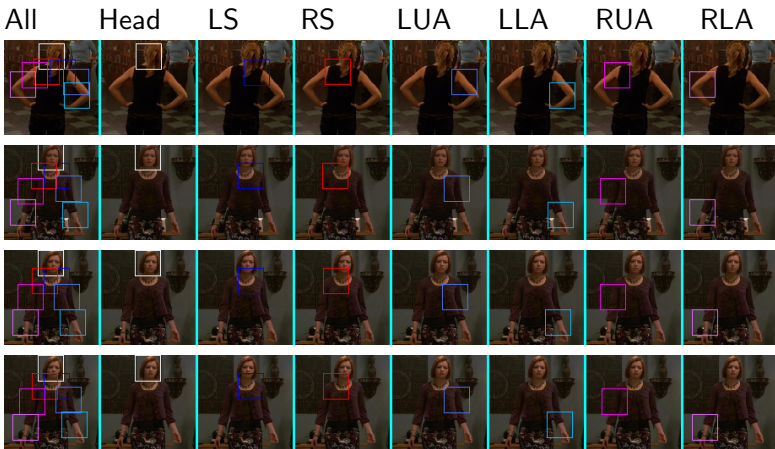
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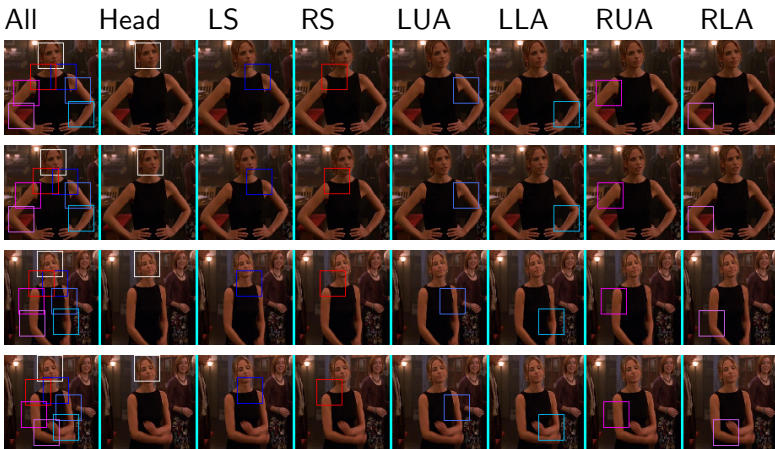
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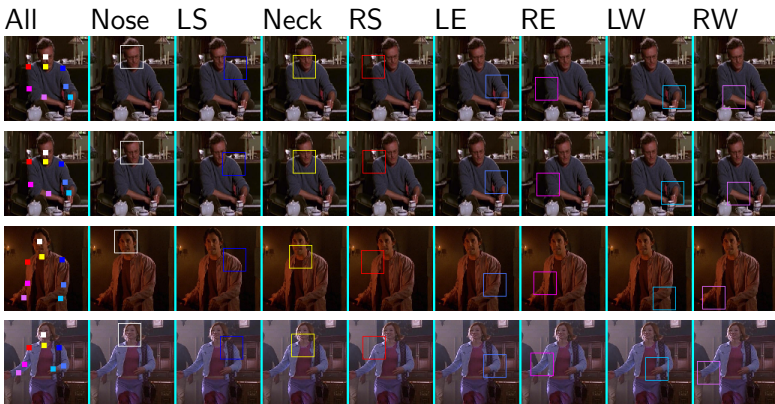
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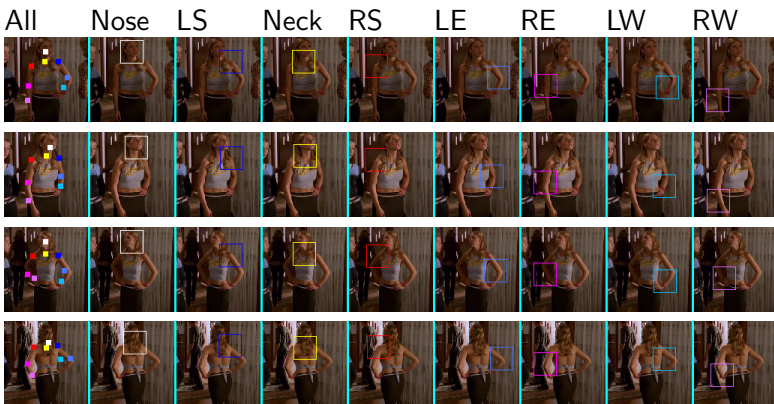
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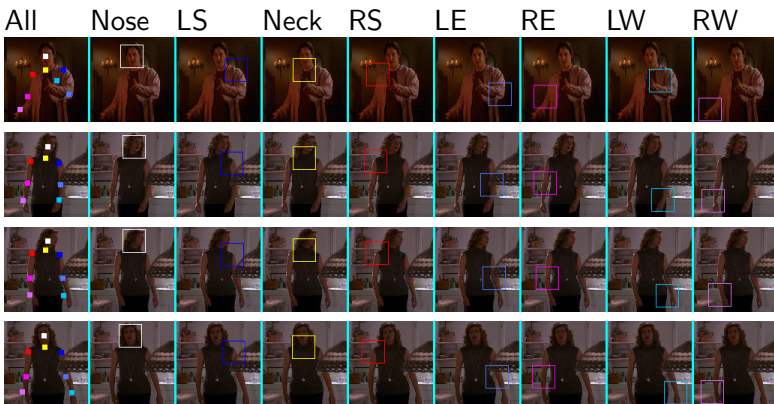
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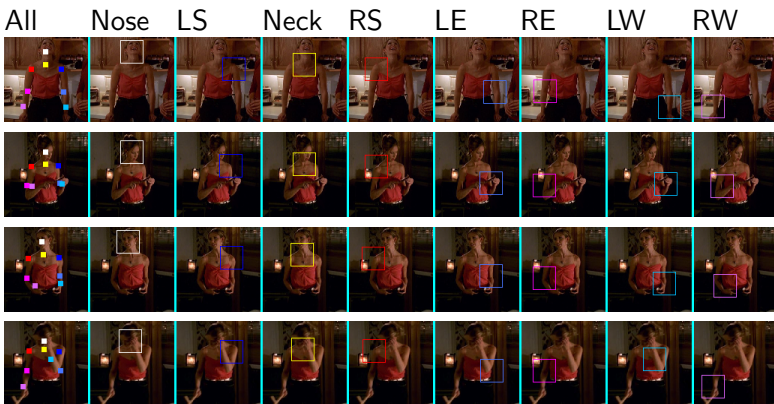
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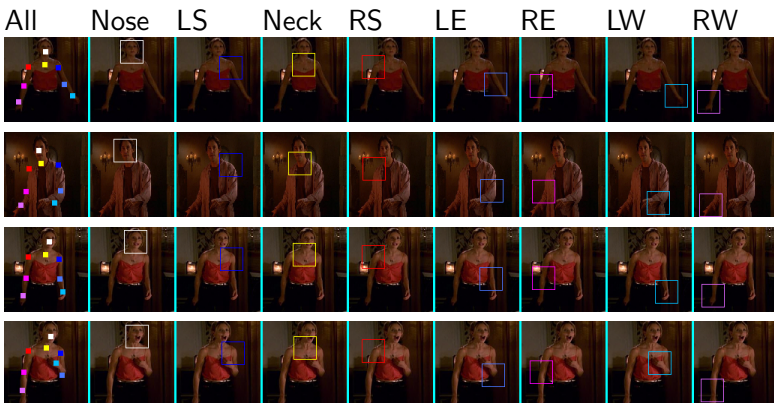
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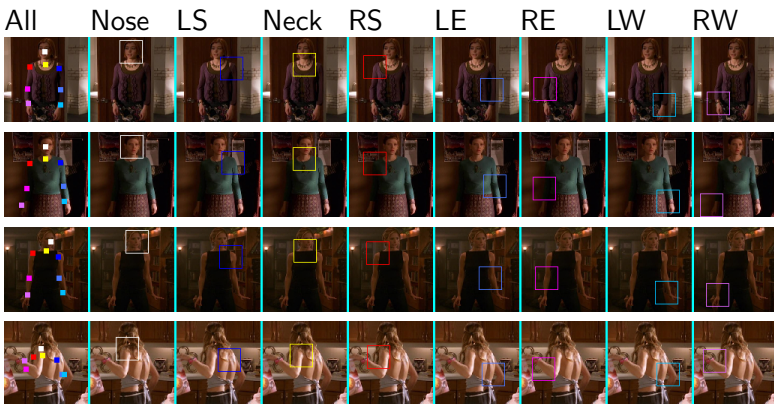
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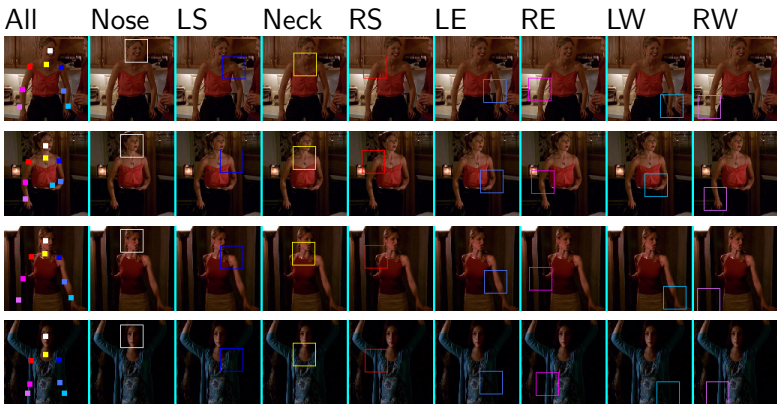
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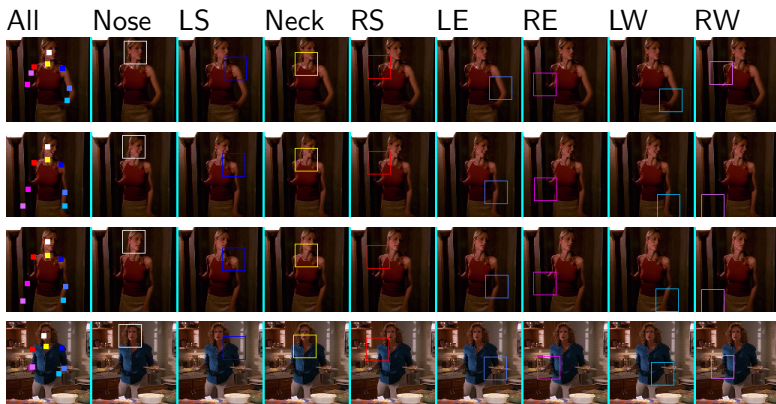
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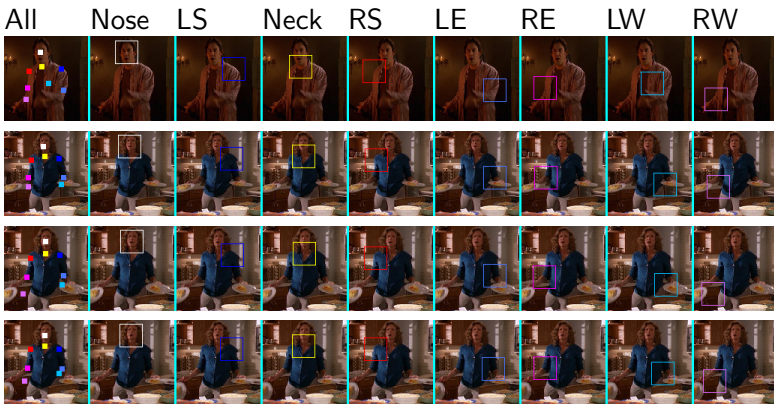
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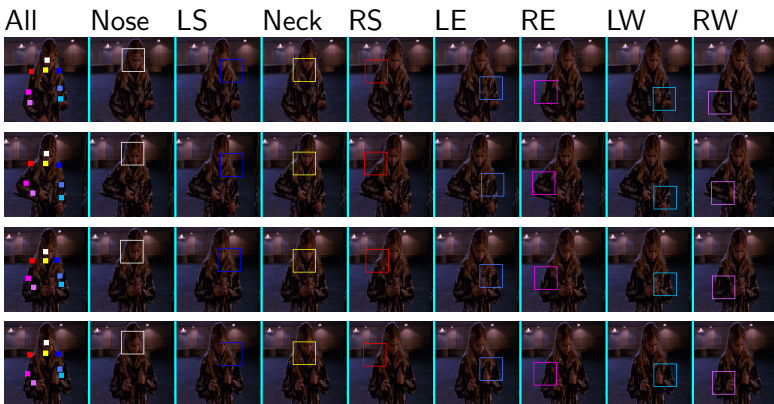
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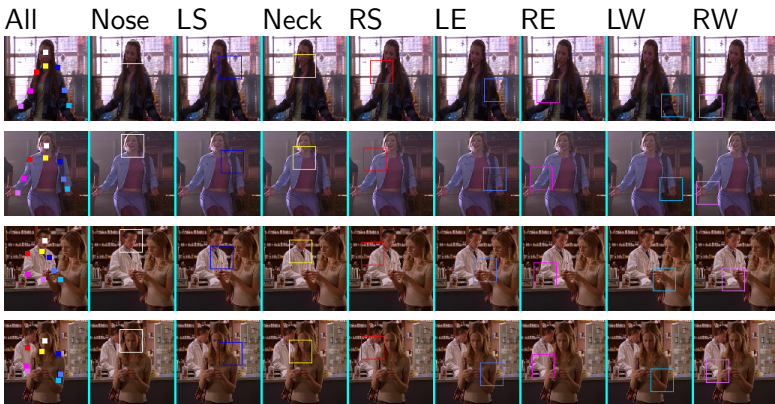
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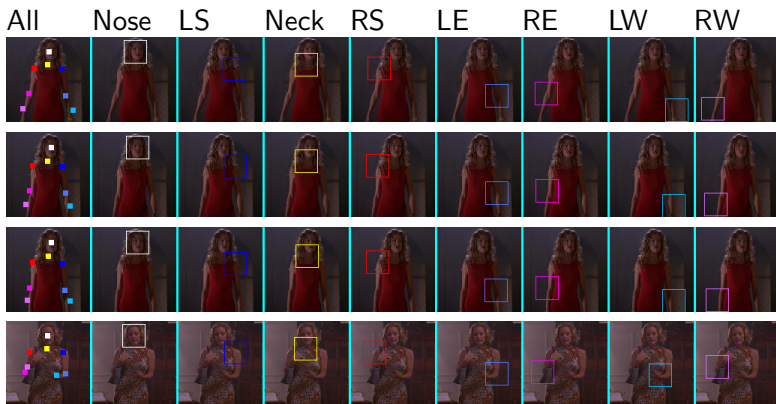
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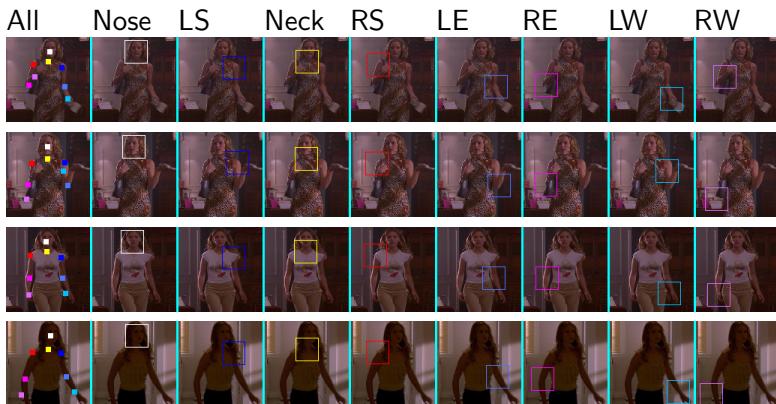
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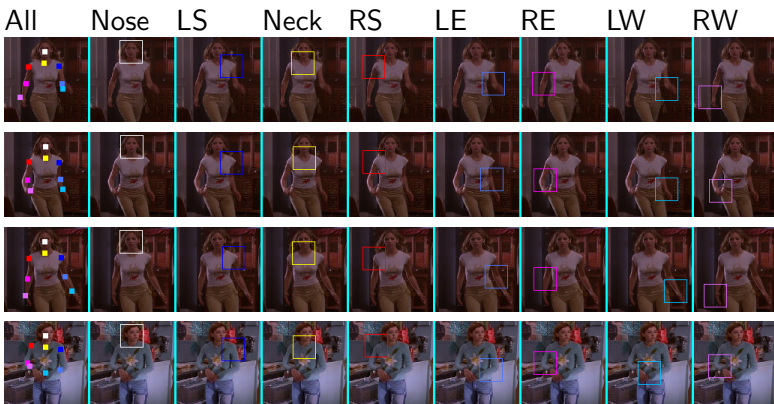
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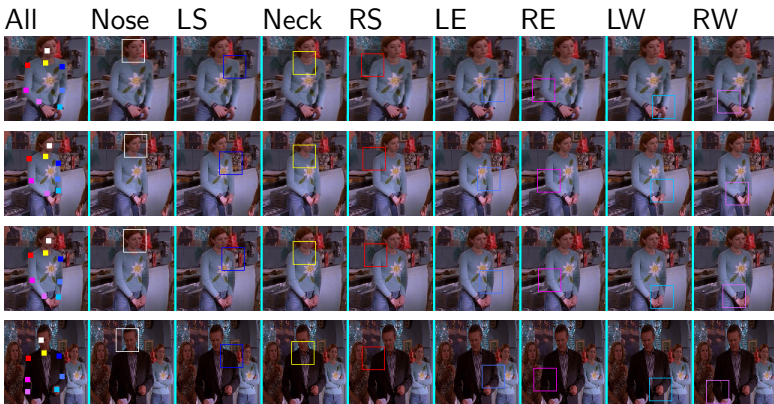
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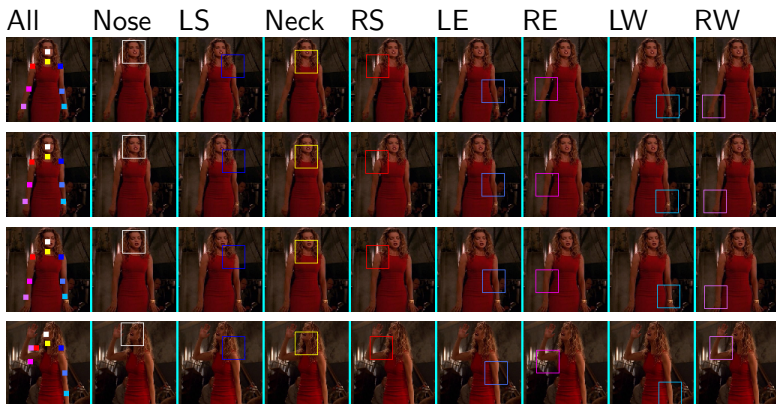
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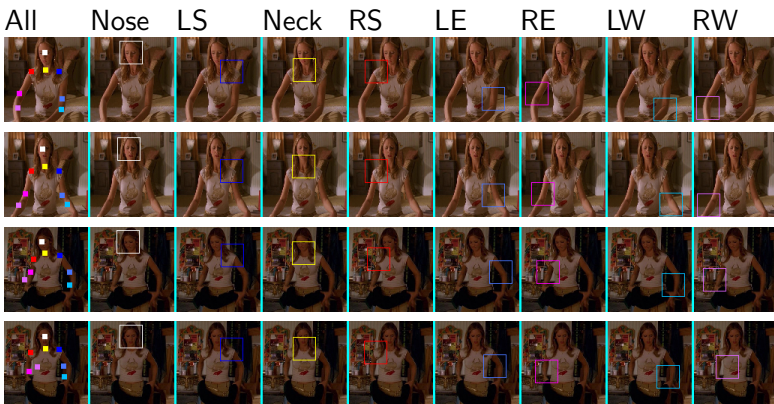
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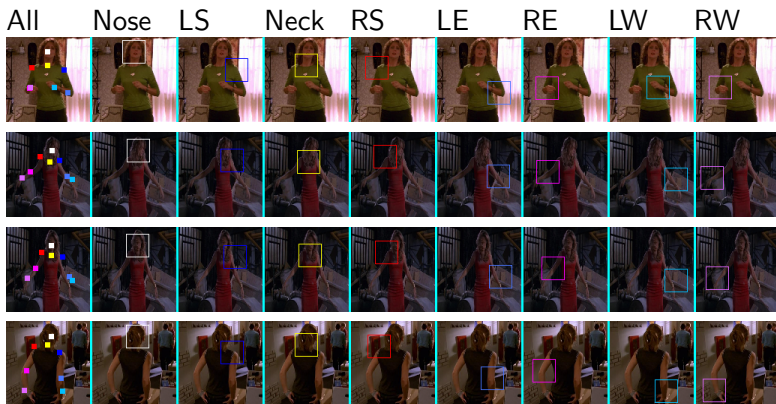
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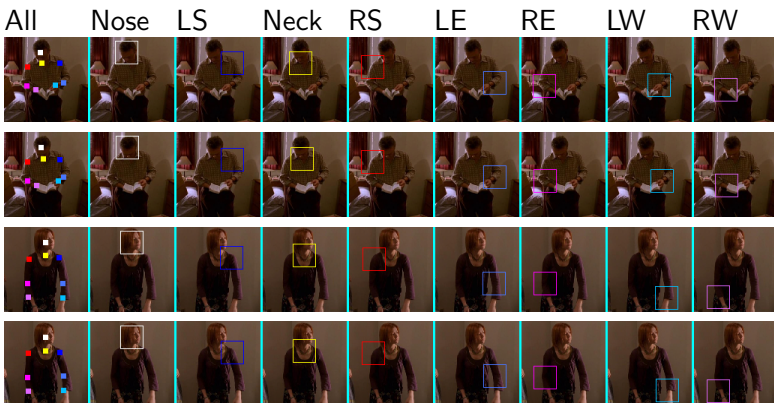
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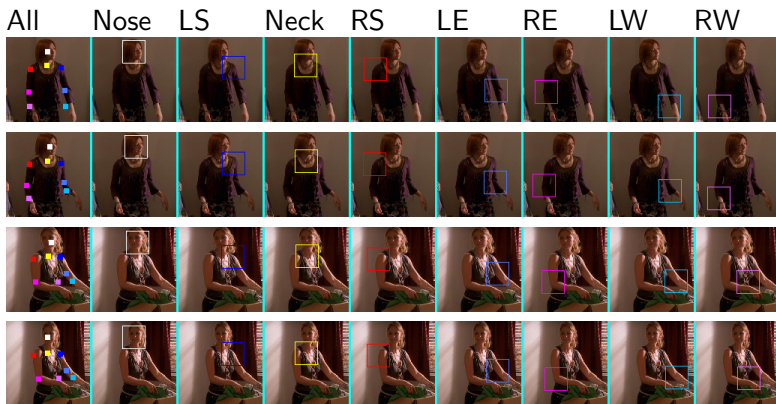
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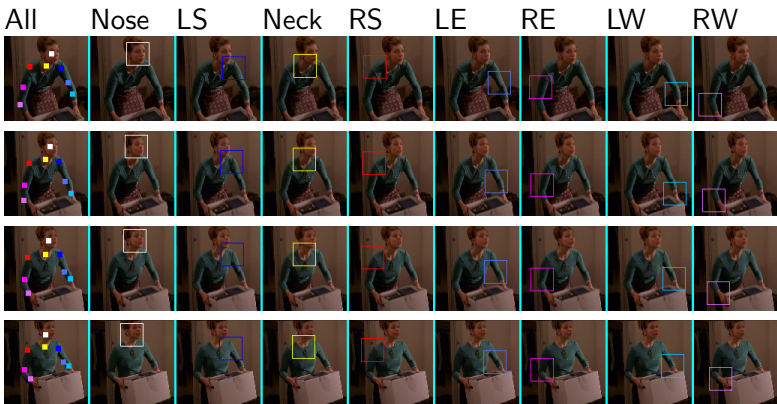
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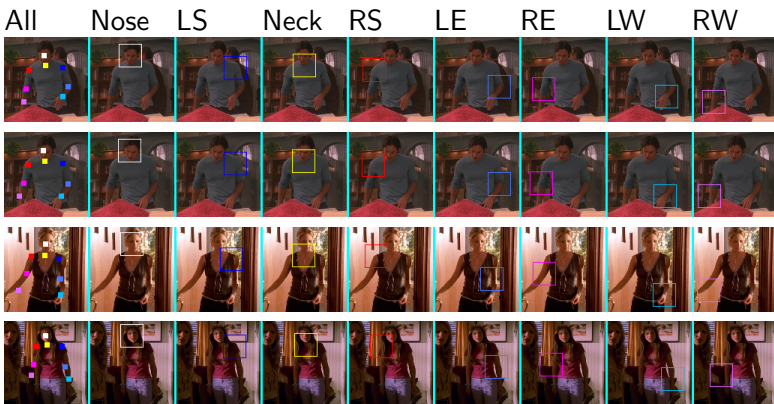
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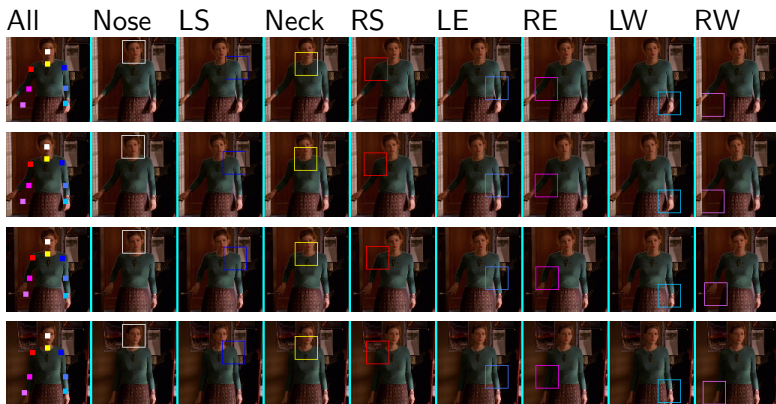
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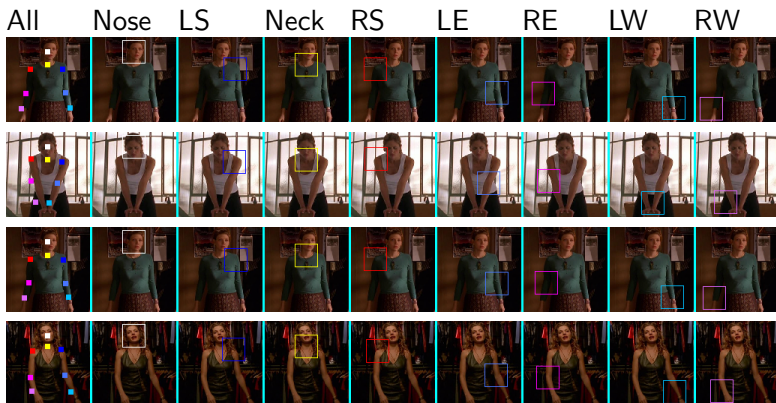
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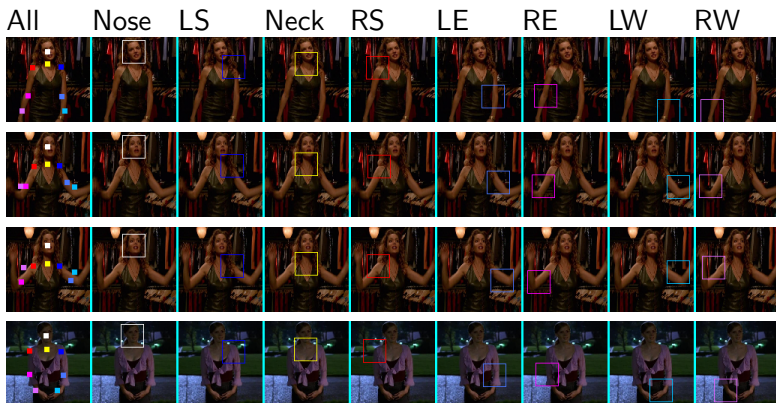
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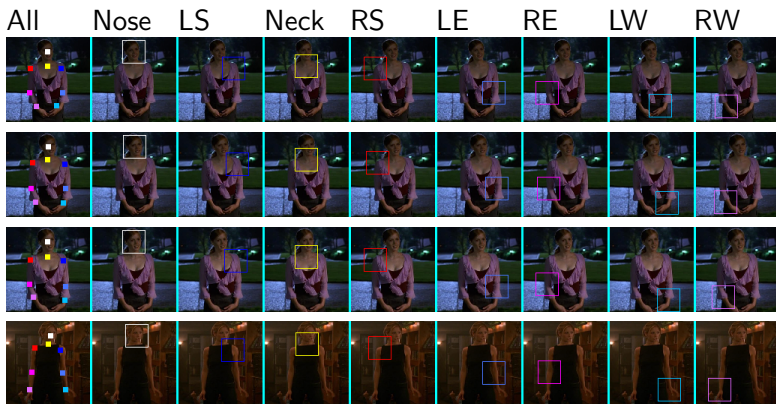
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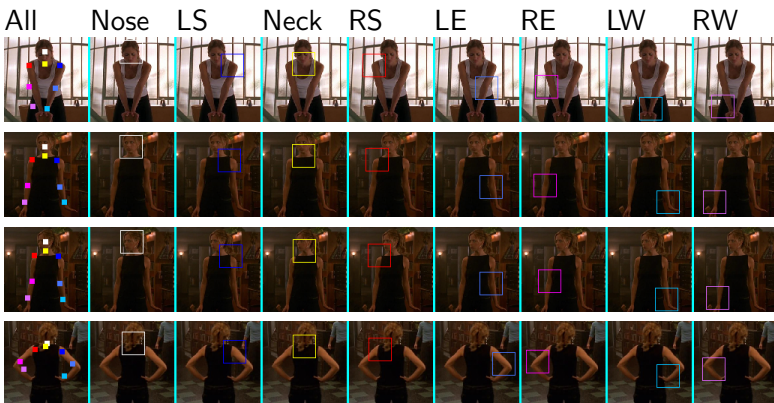
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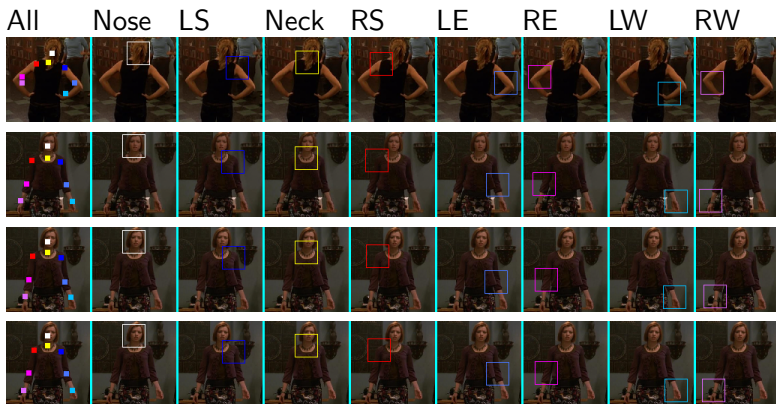
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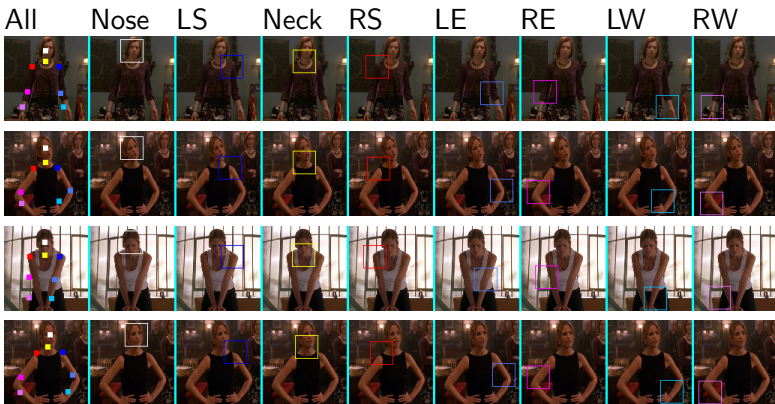
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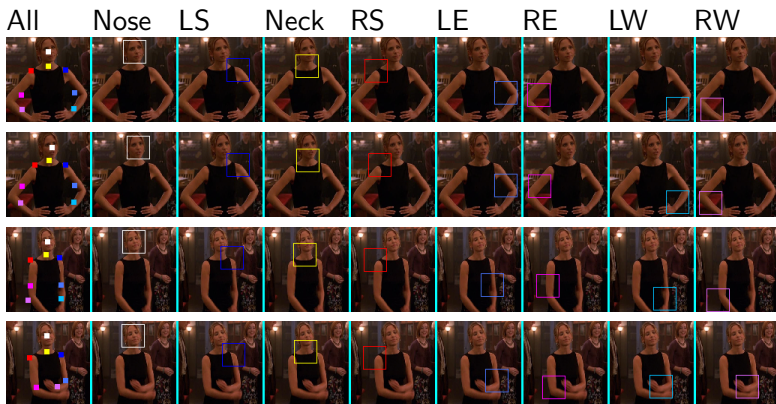
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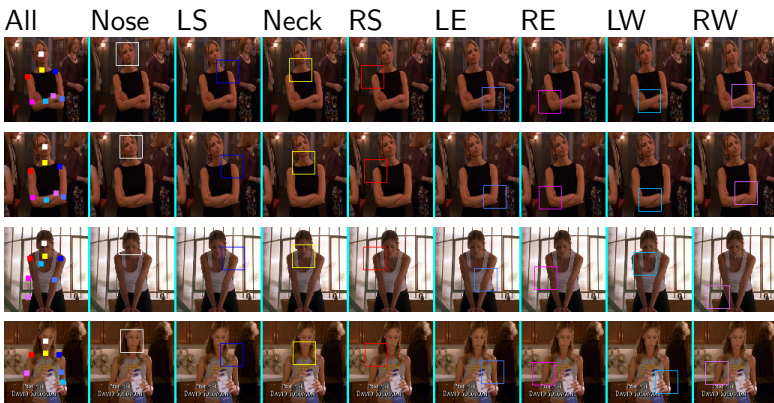
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