

ActivityNet Challenge

Home Action Genome

Task3 : Privacy Concerned Activity Recognition

Team: cvpaper.challenge

<http://xpaperchallenge.org/cv/>



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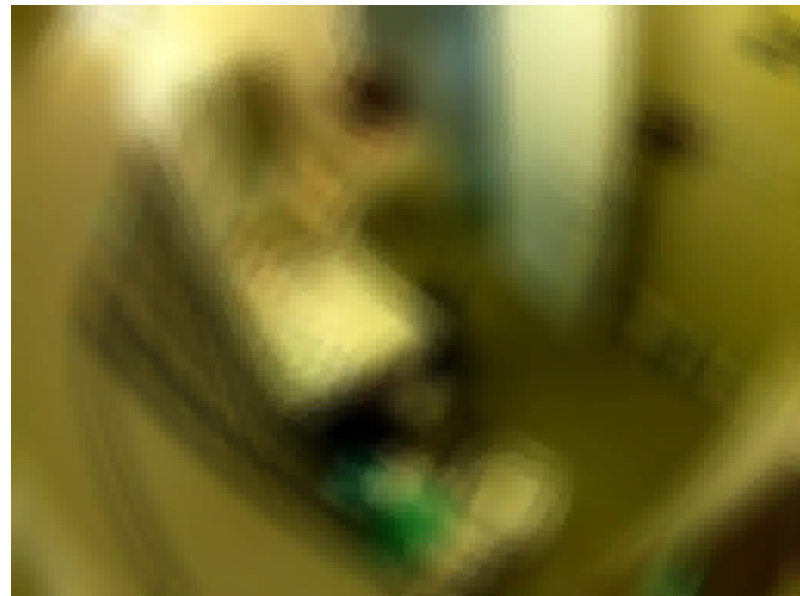
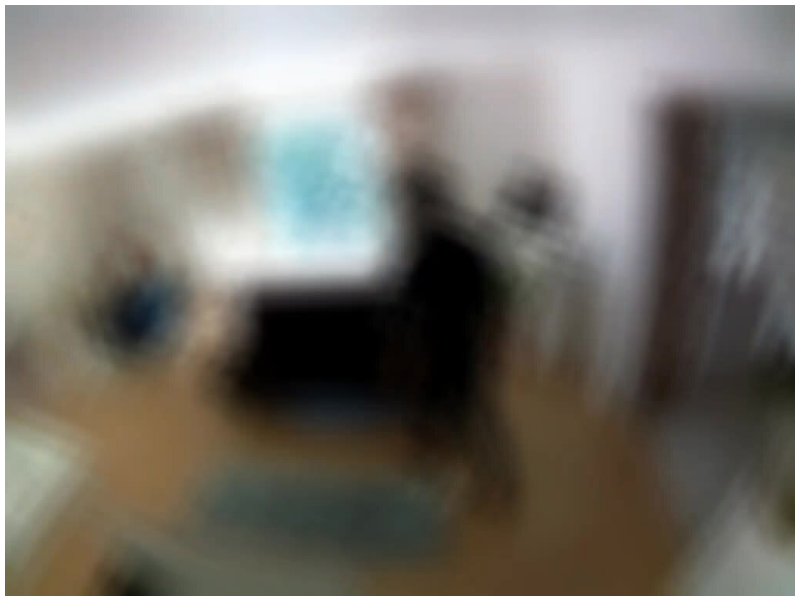
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Privacy Concerned Activity Recognition

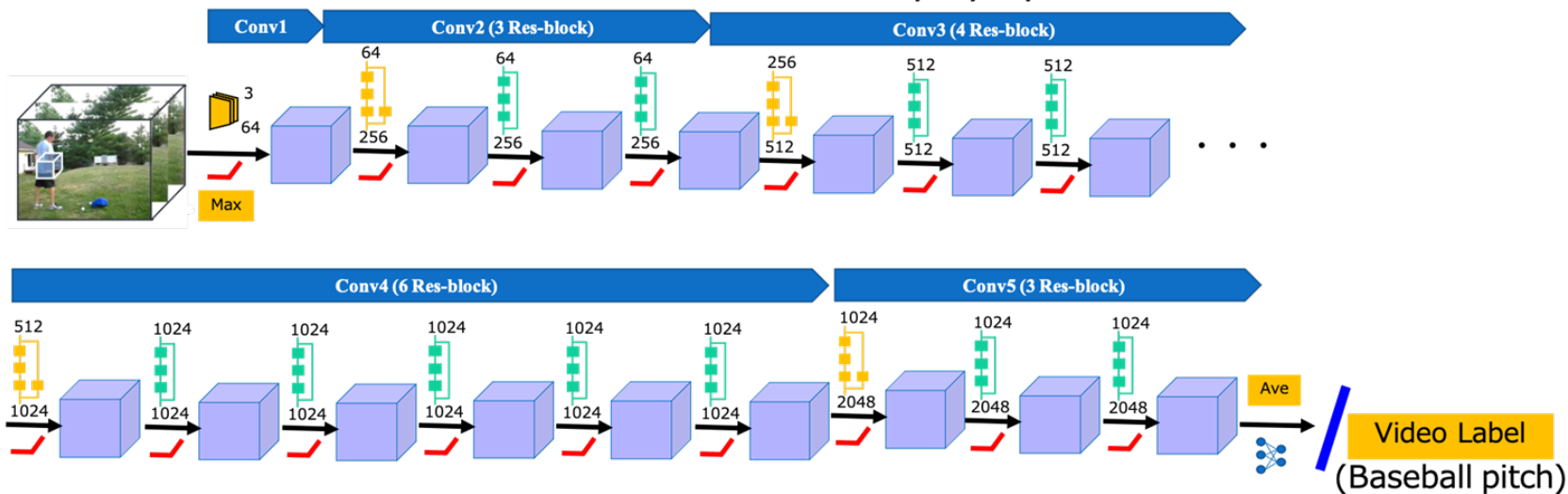
- Input images are blurred for concerned privacy
- Action classification



Model Description

- 3D Residual Network (3D ResNet)

[3, 4, 6, 3]



Experiment

- Comparing 3D ResNets with different hyperparameters
- Comparison with multiple pre-trained models
 - Pre-trained models
 - Kinetics-700 pre-training
 - Gaussian blurred Kinetics-700 pretraining



Original Kinetics-700



Blurred Kinetics-700

Experimental setting

	Param①	Param②
Class	75	75
Model depth	50	18
Batch size	8	16
Image size (pixels)	112	80
Video duration (frames)	32	8
Epoch	200	200

Results on validation set

Pre-train / Param	Top-1 accuracy	Top-5 accuracy	Score
no pre-training / ①	0.094	0.370	0.234
no pre-training / ②	0.087	0.326	0.218
Kineics-700 / ①	0.101	0.409	0.258
Kinetics-700_blur / ①	0.094	0.390	0.244

- Kinetics-700 pre-trained 3D ResNet got the best accuracy.
- Gaussian blurred pre-training did not improve accuracy compared with original pre-training.

References

- Kensho Hara, Hirokatsu Kataoka, Yutaka Satoh,
“Can Spatiotemporal 3D CNNs Retrace the History of 2D CNNs and ImageNet?”,
Proc. IEEE conference on Computer Vision and Pattern Recognition (2018)