Department of Statistics

MASTER'S THESIS PRESENTATION

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Robustness of Convolutional Networks to Blur

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ABSTRACT

Deep convolutional networks for computer vision tasks are usually trained on datasets of sharp, high-quality images. However, these datasets are not representative of real-world images, where some degree of blur is common. Given the popularity of hand-held smartphone cameras, many photos suffer from camera motion and defocus blur. The accuracy of convolutional networks decreases substantially with increasing levels of blur.

In considering the performance of pre-trained networks on blurred images, we find an interaction between image scale and accuracy. We explore the degree to which multi-scale testing decreases accuracy in the presence of substantial blur. To improve performance on blurred images without impacting accuracy on sharp data, we propose several data augmentation and fine-tuning techniques that take into account the effect of scale.

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