

Applying Deep Learning to Detect Blurry Images

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< General iPhone Storage

iPhone 19.6 GB of 32 GB Used



Photos Apps Media Other

 Photos 6.95 GB >
Last Used: Dec 7, 2017

 得到 1.89 GB >
Last Used: Dec 7, 2017

 WeChat 729.5 MB >
Last Used: Dec 7, 2017

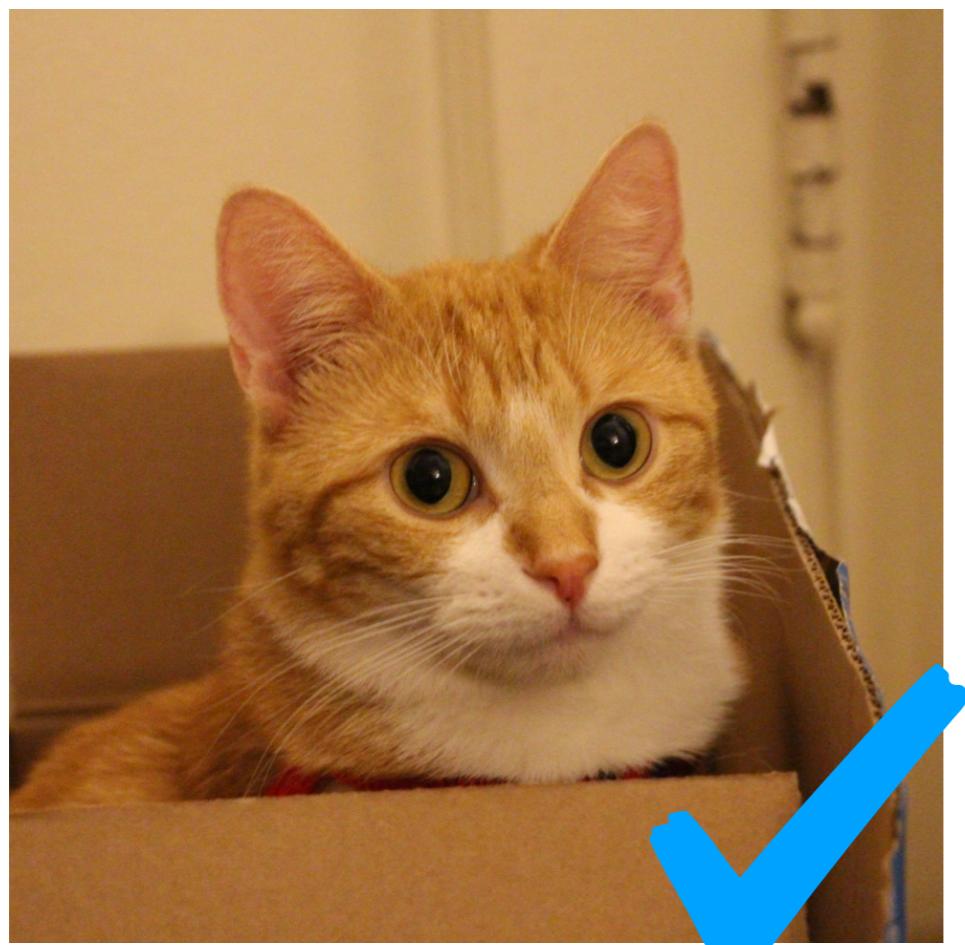
 Music 682.2 MB >
Last Used: Dec 5, 2017

 Messages 375 MB >
Last Used: Dec 7, 2017

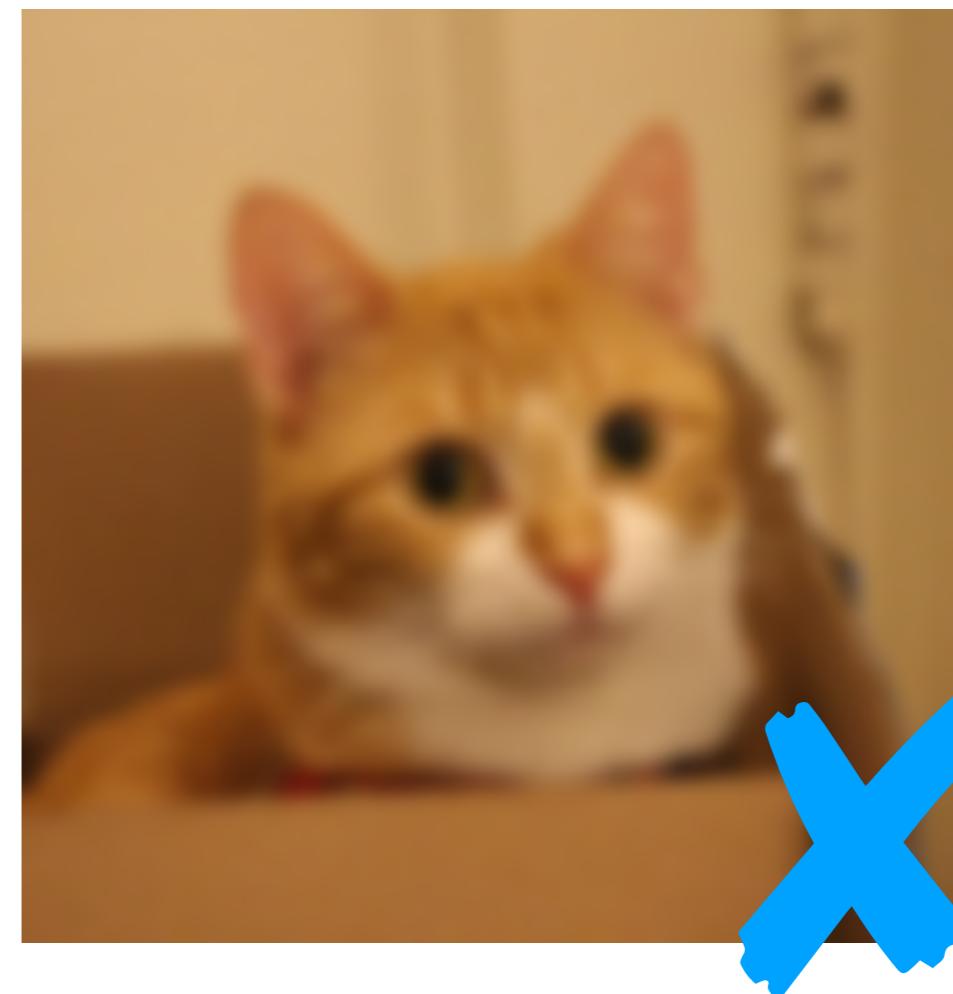
 Mail 286.3 MB >
Last Used: Dec 6, 2017

 Safari 264 MB >
Last Used: Dec 7, 2017

Labeled as ‘Clear’

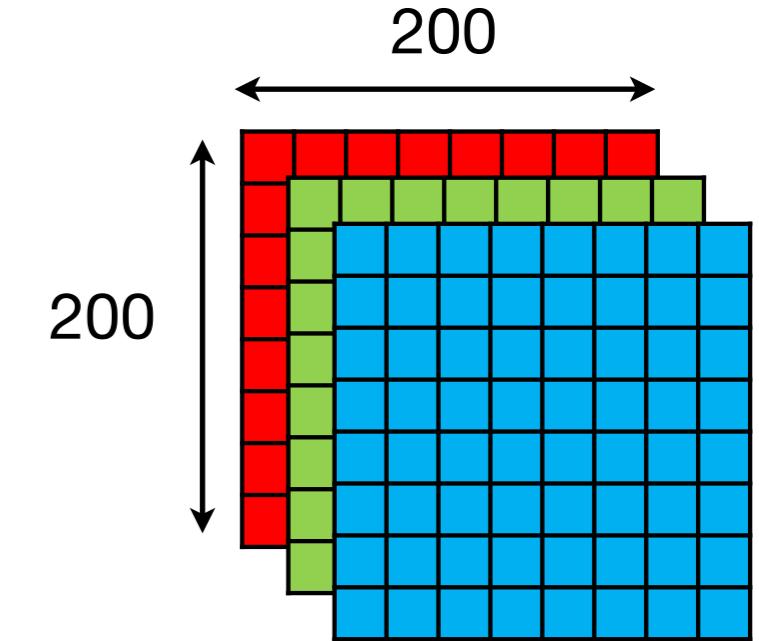
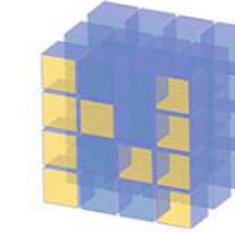
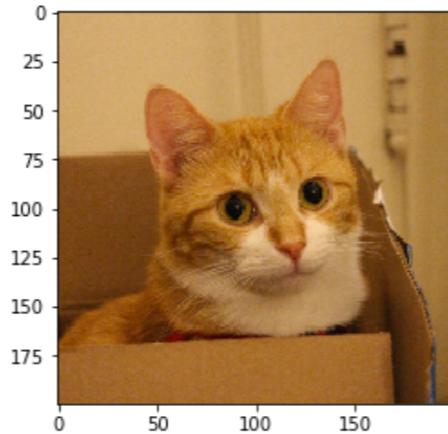
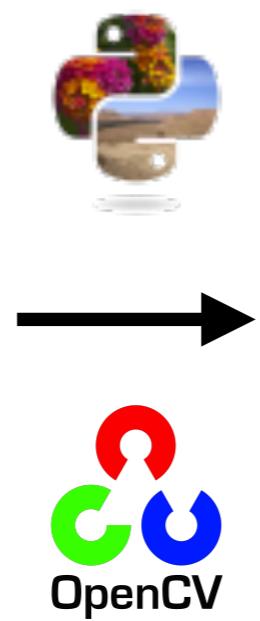


Labeled as ‘Blurry’



Objective:
detect blurry images

- 1000 clear images
- 1000 blurry images



Convolutional
Neural Network

TensorFlow

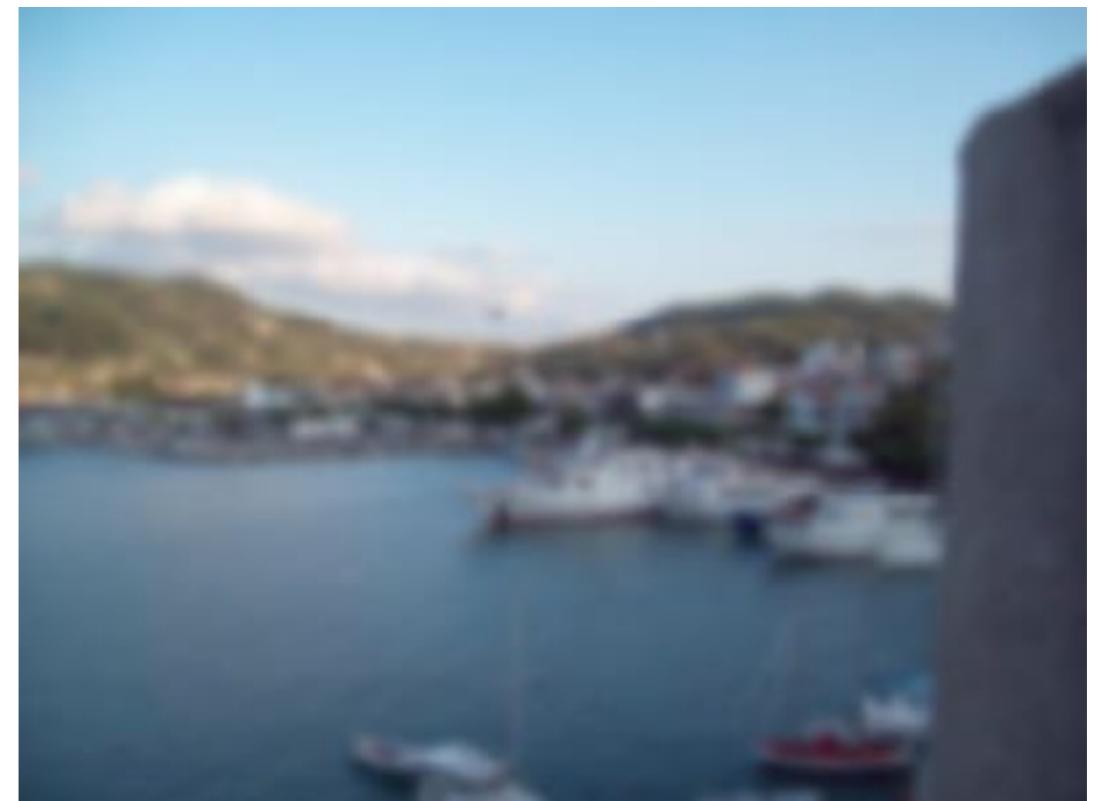
Keras

The trained CNN model gives reasonable predictions

Predicted as ‘Clear’



Predicted as ‘Blurry’



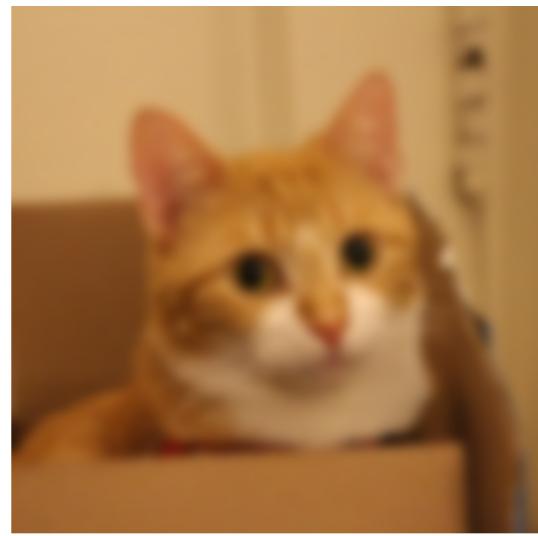
95% accuracy

better than 85%, as predicted with OpenCV

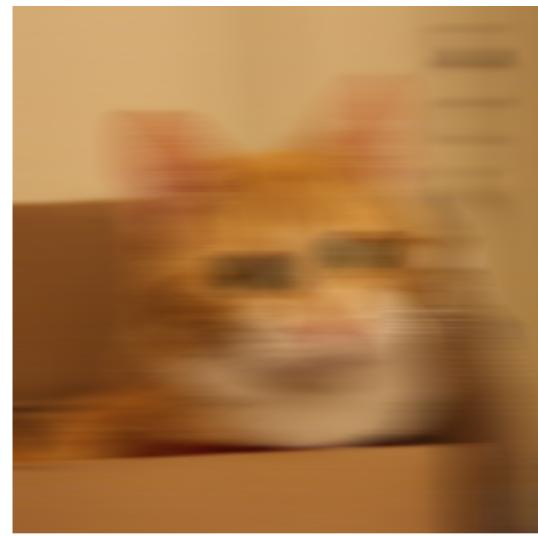
CNN model can distinguish images blurred by various methods



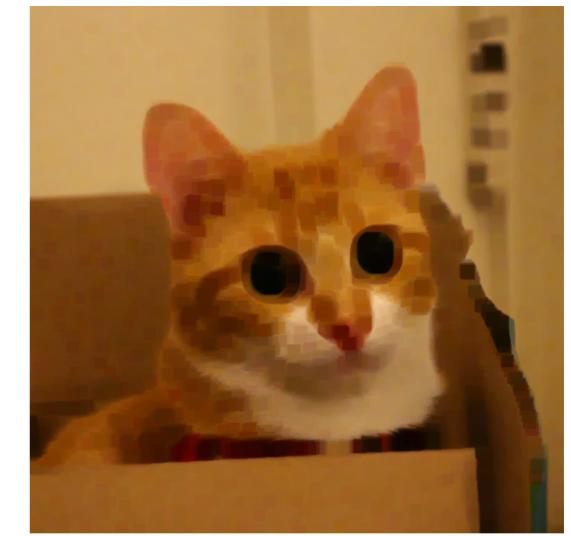
Original



Gaussian



Motion



MinFilter



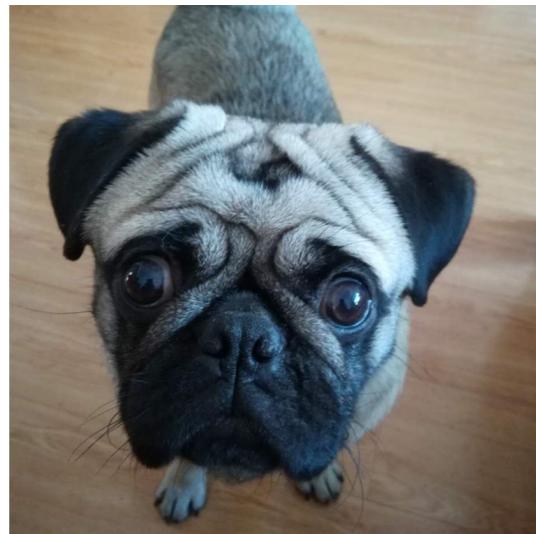
out-of-focus

90% accuracy

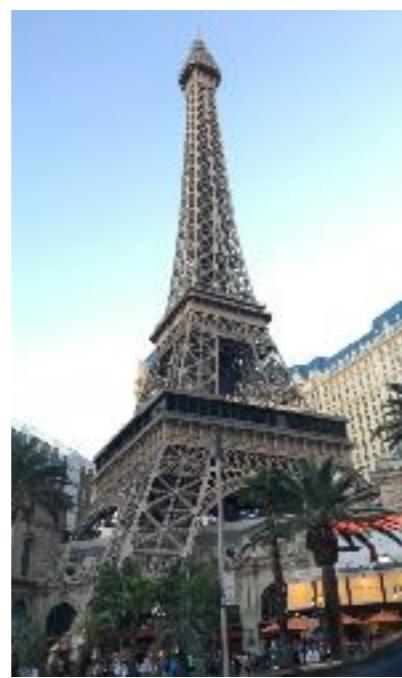
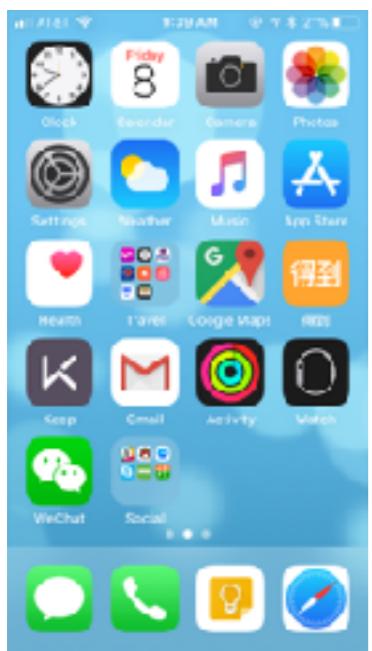
after training 5000 images/5 labels

Potential applications

Group images



Deblur





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Credits

- <https://www.anysoftwaretools.com/fix-iphone-storage-almost-full/>
- <http://lxu.me/>
- <http://www.cse.cuhk.edu.hk/leojia/projects/dblurdetect/dataset.html>
- <http://www02.smt.ufrj.br/~eduardo/ImageDatabase.htm>
- <http://web.cecs.pdx.edu/~fliu/project/kernelfusion/>
- <http://mklab.iti.gr/project/imageblur>
- <http://tatineni.xyz/Project5/>