

Blur Detection iPhone App

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Description

With the development of mobile phones, camera is almost a must in any modern phone. However, the photographs from mobile phone are usually plagued by many problems such as noise, or various kinds of blur. In particular, the phones are usually not design to be used primarily as a camera. So it is usually not easy to hold steadily when taking pictures, resulting in blurred photographs, which is usually not realized on the spot due to small screen size.

The goal of this project is to create an application that will warn the user of a motion blur. The program will employ α -motion blur constraint model, which can detect motion from a single image [1]. The image is modeled as a combination of foreground and background with a pixel-dependent alpha parameter. We will be looking at both space-invariant motion blur (handshake), and also space-variant (subject moving), and use the segmentation of the motion field to classify between the two. This algorithm employs spectral matting to recover the alpha channel of the image [2]. Our application will also attempt to classify the blur type between motion blur and defocus blur, by employing the fact that the gradient of the alpha channel will be distributed differently in the case of motion blur and defocus blur [3].

This application will be developed for an iOS device.

[1] Shengyang Dai; Ying Wu; , "Motion from blur," *Computer Vision and Pattern Recognition, 2008. CVPR 2008. IEEE Conference on* , vol., no., pp.1-8, 23-28 June 2008
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URL: <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4587582&isnumber=4587335>

[2] A. Levin, A. Rav-Acha, and D. Lischinski. Spectral matting. In CVPR, 2007.

[3] Bolan Su, Shijian Lu, and Chew Lim Tan. 2011. Blurred image region detection and classification. In *Proceedings of the 19th ACM international conference on Multimedia (MM '11)*. ACM, New York, NY, USA, 1397-1400.
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