Eigenbackground revisited: can we model the background with eigenvectors? SUPPLEMENTARY MATERIAL

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***Abstract*—... In this paper, we show the main problem of the Eignebackground is in its own core and in fact, it is not a good idea to use strongest eigenvectors for modeling the background. Instead, we propose an alternative solution by exploiting the weakest eigenvectors (which are usually thrown away and treated as garbage data) for background modeling.**

I. Animated version of the last three figures of the paper

In the last 3 figures of the paper, we showed sub-spaces produced by 5 principal components' pairs. Hence 25 pairs are demonstrated as the animations, which works only on **Adobe Reader** $\geq$ 7. Also note that due to appending this document to the manuscript by the submitting system that, the animations do not working. Please download this file from the author's github page: https://github.com/mamintoosi/Eigenbackground-Revisited/raw/master/Eigenbackground_Revisited_Supplementary.pdf and open it in Adobe Reader $\geq$ 7.

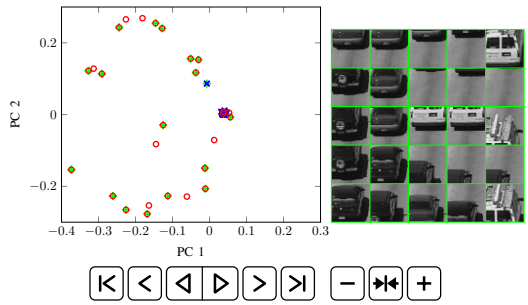

Fig. 9 (animated). Animated demonstration for the effect of different principal components for video: ***Highway***. (Left panel:) the principal components' sub-space of the video. The blue crosses/red circles, show background/foreground images. The green plus points are the closest projected images to the vertices of a unified grid, defined by the marginal of the principal components. (Right panel:) The images corresponding to the green plus points. Foreground images are well distributed in sub-spaces related to strongest eigenvectors (first eigenvectors); in contrast background frames are well propagated in sub-spaces corresponding to the weakest eigenvectors.

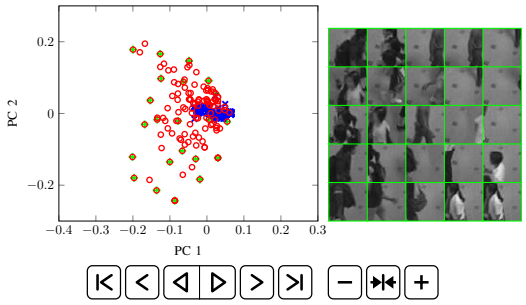

Fig. 10 (animated). Animated demonstration for the effect of different principal components for video: ***ShoppingMall***. (Left panel:) the principal components' sub-space of the video. The blue crosses/red circles, show background/foreground images. The green plus points are the closest projected images to the vertices of a unified grid, defined by the marginal of the principal components. (Right panel:) The images corresponding to the green plus points. Foreground images are well distributed in sub-spaces related to strongest eigenvectors (first eigenvectors); in contrast background frames are well propagated in sub-spaces corresponding to the weakest eigenvectors.

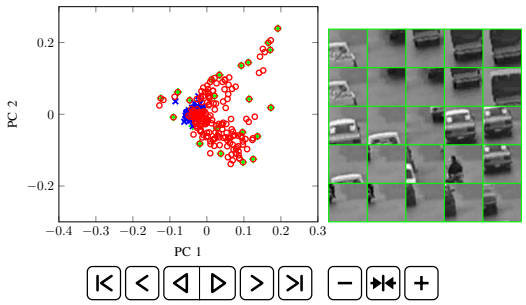

Fig. 11 (animated). Animated demonstration for the effect of different principal components for video: ***Traffic***. (Left panel:) the principal components' sub-space of the video. The blue crosses/red circles, show background/foreground images. The green plus points are the closest projected images to the vertices of a unified grid, defined by the marginal of the principal components. (Right panel:) The images corresponding to the green plus points. Foreground images are well distributed in sub-spaces related to strongest eigenvectors (first eigenvectors); in contrast background frames are well propagated in sub-spaces corresponding to the weakest eigenvectors.

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