Research Article

Removal of blur in images based on least squares solutions

1. Predrag S. Stanimirović[1,*],
2. Spiros Chountasis[2],
3. Dimitrios Pappas[3],
4. Igor Stojanović[1]

Issue

Mathematical Methods in the Applied Sciences

Additional Information

How to Cite

Stanimirović, P. S., Chountasis, S., Pappas, D. and Stojanović, I. (2013), Removal of blur in images based on least squares solutions. Math. Meth. Appl. Sci., 36: 2280–2296. doi: 10.1002/mma.2751

Publication History

1. Issue published online: 12 NOV 2013
2. Article first published online: 27 FEB 2013
3. Manuscript Accepted: 22 NOV 2011
4. Manuscript Revised: 21 NOV 2011

- Abstract
- Article (/doi/10.1002/mma.2751/full)
- References (/doi/10.1002/mma.2751/references)
- Cited By (/doi/10.1002/mma.2751/citedby)

View Full Article (HTML) (/doi/10.1002/mma.2751/full) Get PDF (1193K) (/doi/10.1002/mma.2751/pdf)

Keywords:

We propose an image restoration method. The method generalizes image restoration algorithms that are based on the Moore–Penrose solution of certain matrix equations that define the linear motion blur. Our approach is based on the usage of least squares solutions of these matrix equations, wherein an arbitrary matrix of appropriate dimensions is included besides the Moore–Penrose inverse. In addition, the method is a useful tool for improving results obtained by other image restoration methods. Toward that direction, we investigate the case where the arbitrary matrix is replaced by the matrix obtained by the Haar basis reconstructed image. The method has been tested by reconstructing an image after the removal of blur caused by the uniform linear motion and filtering the noise that is corrupted with the image pixels. The quality of the restoration is observable by a human eye. Benefits of using the method are illustrated by the values of the improvement in signal-to-noise ratio and in the values of peak signal-to-noise ratio. Copyright © 2013 John Wiley & Sons, Ltd.

View Full Article (HTML) (/doi/10.1002/mma.2751/full) Get PDF (1193K) (/doi/10.1002/mma.2751/pdf)

More content like this

Find more content:

- like this article (/advanced/search/results?
articleDoi=10.1002/mma.2751&scope=allContent&start=1&resultsPerPage=20)

Find more content written by:

- Predrag S. Stanimirović (/advanced/search/results?searchRowCriteria[0].queryString="Predrag S. Stanimirovi%C4%87"&searchRowCriteria[0].fieldName=author&start=1&resultsPerPage=20)
- Spiros Chountasis (/advanced/search/results?searchRowCriteria[0].queryString="Spiros Chountasis"&searchRowCriteria[0].fieldName=author&start=1&resultsPerPage=20)
- Dimitrios Pappas (/advanced/search/results?searchRowCriteria[0].queryString="Dimitrios Pappas"&searchRowCriteria[0].fieldName=author&start=1&resultsPerPage=20)
- Igor Stojanović (/advanced/search/results?searchRowCriteria[0].queryString="Igor Stojanovi%C4%87"&searchRowCriteria[0].fieldName=author&start=1&resultsPerPage=20)
- All Authors (/advanced/search/results?searchRowCriteria[0].queryString="Predrag S. Stanimirovi%C4%87" "Spiros Chountasis" "Dimitrios Pappas" "Igor Stojanovi%C4%87"&searchRowCriteria[0].fieldName=author&start=1&resultsPerPage=20)