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## **Abstract**

This paper proposes a discrete wavelet-based stereo matching technique. A discrete wavelet transform is first applied to a pair of stereo images to decorrelate the images into a number of approximations. Information in the basebands is less sensitive to shift variability of the wavelet transform. A self-adapting dissimilarity measure is employed to generate a disparity map of the stereo pairs. Results show that the proposed technique produces smoother disparity maps with less computation cost.

**Refer**

### ences

- G. Vander Val, M. Hansen, M. Piacentino, "The ACADIA Vision processor", Proceedings of 5th International Workshop on Computer Architecture for Machine Perception, Padova, Italy, pp. 31–40,2001.
- L. Di Stefano, S. Mattoccia, "Fast Stereo Matching for the VIDET System using a General Purpose Processor with Multimedia Extensions", Proceedings of 5th International Workshop on Computer Architecture for Machine Perception, Padova, Italy, pp. 356–362,2000.
- L. Di Stefano, M. Marchionni, S. Mattoccia, and G. Neri, "A Fast Area-Based Stereo Matching Algorithm", Image and Vision Computing, vol. 22, pp. 983-1005,2004.
- K. Muhlmann, D. Maier, R. Hesser, and R. Manner, "Calculating dense disparity maps from color stereo images, an efficient implementation," Proc. IEEE Workshop on Stereo and Multi-Baseline Vision (SMBV 2001), pp. 30-36, 2001.
- L. Di Stefano, M. Marchionni, S. Mattoccia, and G. Neri, "A Fast Area-Based Stereo Matching Algorithm," Image and Vision Computing, vol. 22, pp. 983-1005, March 2004.
- K. J. Yoon and I. S. Kweon, "Adaptive support-weight approach for correspondence search," IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 28, pp. 650-656, April 2006.
- H. Kim, S. Yang, and K. Sohn, "3D reconstruction of stereo images for interaction between real and virtual worlds," Proc. IEEE International Conference on Mixed and Augmented Reality, October 2003.
- A. S. Ogale and Y. Aloimonos, "Robust Contrast Invariant Stereo Correspondence," Proc. IEEE International Conference on Robotics and Automation, ICRA 2005, pp. 819-824, April 2005.
- S. Mallat, "A Wavelet Tour of Signal Processing", Academic Press, 1999.
- I. Sarkar and M. Bansal, "A wavelet-based multiresolution approach to solve the stereo correspondence problem using mutual information", IEEE Transaction on System, Man, and Cybernetics, vol. 37, pp. 1009-1014, August 2007.
- P. Begheri and C. V. Sedan, "Stereo correspondence matching using multiwavelets", Fifth International conference on Digital Telecommunication, 2010.
- A. Bhatti, S. nahavandi, M. Hossny, "Wavelets/ Multiwavelets bases and correspondence estimation problem; An analytic study", 11th International Conference on control, automation, robotics and vision, Dec 2010.
- A. Klaus, M. Sormann and Konrad Karner "Segment-Based Stereo Matching Using Belief Propagation and a Self-Adapting Dissimilarity Measure", 2006.
- <http://cvlab.epfl.ch/data/strechamVS/>, 2010.
- <http://vision.middlebury.edu/stereo/>, January 2010.

### Index Terms

Computer Science

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**Keywords**

Stereo Matching Discrete Wavelet Transform Disparity