A Proposed Method to Measure Sub Pixel Shift in Egyptsat-1 Aliased Images

Abstract

This paper presents a method for image-based shift measurement and investigates solution for the mismatched bands of egyptsat-1 satellite. A tiny error in measuring sub pixel shift leads to an incorrect image focusing. Different methods, using frequency approach are conducted with different Tukey window sizes for measuring the sub pixel shift. The present method use an aim to select most important frequency for three parameter; horizontal, vertical and rotation with different window size. To test the present method; we used the SPOT-5 satellite data with known displacement. The obtained results are acceptable, and might solve Egyptsat-1 problem of mismatches between its bands. Bands 1, 2 could also be used in super resolution reconstruction methods
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References

- C. Fratter, M. Moulin, H. Ruiz, P. Charvet, D. Zobler, "The SPOT-5
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- Steven T. Karris, “Signals and Systems with MATLAB Applications, Second
- B. S. Reddy and B. N. Chatterji, “An FFT-based technique for translation,
  rotation, and scale-invariant image registration”; IEEE Transactions on Image Processing,
  vol. 5, no. 8, pp. 1266–1271, 1996.
- Kourosh Jafari-Khouzani and Hamid Soltanian-Zadeh “Rotation-Invariant
  Multiresolution Texture Analysis Using Radon and Wavelet Transforms”; IEEE
- B. Marcel, M. Briot, and R. Murrieta, “Calcul de translation et rotation par la
- Salah Althloothi, Mohammad H. Mahoor, Richard M. Voyles “A Robust Method for
  Rotation Estimation Using Spherical Harmonics Representation”; IEEE Transactions on
- Sung Cheol Park; Min Kyu Park; Moon Gi Kang; , “Super-resolution image
  reconstruction: a technical overview”; Signal Processing Magazine, IEEE, vol. 20, No. 3,
- Yunsang Han and Sangkeun Lee, “Parameter Estimation-based Single Image
  Super Resolution”; 1st IEEE Global Conference on Consumer Eletronics (GCCE 2012),

Index Terms

Computer Science

Image Processing

Keywords

Spot-5; sub-pixel shift; Tukey windows; window size; super-resolution