

システム情報工学研究科修士論文概要

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| 年 度 | 平成 25 年度 | 学位名 | 修士(工学) |
| 専 攻 | 知能機能システム | 専攻 | 著者氏名 Muhammad Haris |
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| 論文題目 Efficient Single Super Resolution Based On Edge Characteristic and Its Application (エッジ特性を利用した効率的な単一超解像とその応用) | | | |
| 論文概要 We propose efficient process of super-resolution based on sparse representation and edge characteristic. In the proposed method, semivariogram and texture of high-resolution are used as features to construct the super-resolution images. The principal component analysis succeeds to reduce ~90% the dimension of low-resolution features which reduce the computation time of total process as well. Then, K-singular value decomposition algorithm is used to obtain the sparse representation. Our experiments involve 20 training images and 15 test images with various sizes. It is confirmed that our proposed method generates better result in terms of visual perception and root mean square error (RMSE) value. It is effective to generate sharper edges and cleaner textures. The RMSE values from experiment's result show that our proposed method is 15% better than Bicubic. In addition, we also provide the application of our proposed method to the real world problem, that is unmanned aerial vehicle surveillance. However, there are still open possibility for future research such as combination of image segmentation and super-resolution, overlapped patch, local constraint, 3D sparse super-resolution, and etc. | | | |
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