

Image Fusion based on Flower pollination Optimization and Stationary Wavelet transform.

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Abstract

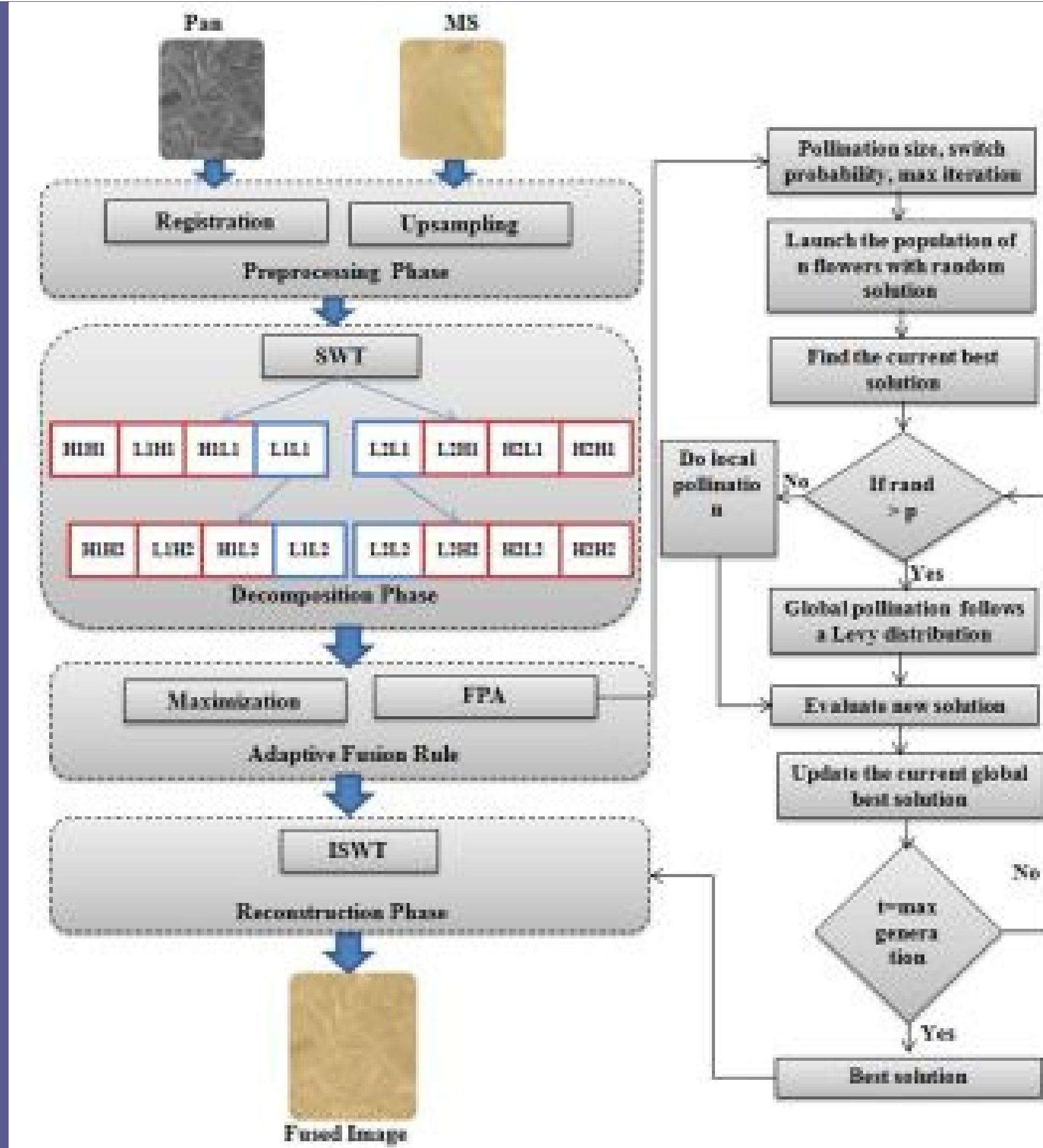
In this paper it mainly focus about the best image fusion algorithm, one of the important thing is one image is panchromatic(black and white) and other is multi-spectral (colored). These images are integrated using stationary wavelet transformation by choosing optimum weight from swarm flower pollination optimization algorithm.

Existing techniques for image fusion

1. IHS (Intensity-Hue-Saturation) Transform
2. Principal Component Analysis (PCA)
3. Pyramid techniques
4. High pass filtering
5. Wavelet Transform
6. Artificial Neural Networks
7. Discrete Cosine Transform

Proposed System

- This paper is proposes the remote sensing image fusion based on more efficient Genetic Algorithm ie, FPA.
- First, the source images decomposed by the Stationary Wavelet Transforms (SWT).
- Then FPA optimized the weight of fusion rule.
- Finally, the Inverse SWT reconstructed fused image.





Techniques Applied

- Flower Pollination Algorithm Optimization
- Stationary Wavelet Transform

Flower pollination Algorithm Optimization

Flower pollination is an intriguing process in the natural world. Its evolutionary characteristics can be used to design new optimization algorithms. FPA is inspired by the pollination process of flowers. The flower algorithm is more efficient than both **Genetic Algorithm** and **Particle Swarm Optimization**.

There are 4 rules of FPA and 2 main rules are

- ★ Global pollination or Cross pollination
- ★ Local pollination or self pollination

Stationary Wavelet Transform

The Stationary wavelet transform (SWT) is also known as Undecimated wavelet transform. Wavelet Transform is basically used in feature detection of images , signal de-noising, pattern recognition and brain image classification. The discrete wavelet transform (DWT) is lack of translation variant property which can be nullified by using stationary wavelet transform (SWT).

In SWT, even if the signal is shifted, the transformed coefficient will not change and also performs better in de-noising and edge detecting.

SWT is similar to DWT is more commonly known as “algorithm a trous” in French meaning “with holes” which refers to inserts zeros in the filter for up sampling the filter and suppressing the down sampling step of the DWT.

Application Enhansment

We can apply thiese technique to medical image fusion such as PET and MRI scanning images.



Thank you