

# HIERARCHICAL GUIDANCE FILTERING- BASED ENSEMBLE CLASSIFICATION FOR HYPER SPECTRAL IMAGES

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# ABSTRACT

- Joint spectral and spatial information should be fully exploited in order to achieve accurate classification results for hyperspectral images.
- In this paper, we propose an ensemble framework, which combines spectral and spatial information in different scales.
- The motivation of the proposed method derives from the basic idea: by integrating many individual learners, ensemble learning can achieve better generalization ability than a single learner.
- In the proposed work, the individual learners are obtained by joint spectral-spatial features generated from different scales



# EXISTING SYSTEM

- Hyperspectral sensors can provide images with hundreds of continuous spectral bands as well as high spatial resolution.
- During the past two decades, hyper spectral images (HSIs) processing techniques have been widely used in many fields, such as spectral unmixing, mineral identification , and environmental monitoring.
- To better utilize the HSI data, many HSI processing techniques are developed
- A popular strategy to improve the classification accuracy is designing multi feature systems. A multiple-kernel learning method by extracting the variation from the different features space



# PROPOSED SYSTEM

- The individual learners are obtained by joint spectral-spatial features generated from different scales. Specially, we develop two techniques to construct the ensemble model, namely, hierarchical guidance filtering (HGF) and matrix of spectral angle distance (mSAD).
- HGF and mSAD are combined via a weighted ensemble strategy. HGF is a hierarchical edge-preserving filtering operation, which could produce diverse sample sets.
- Meanwhile, in each hierarchy, a different spatial contextual information is extracted. With the increase of hierarchy, the pixels spectra tend smooth, while the spatial features are enhanced



# HARDWARE REQUIRMENT

- Processor - Intel
- Speed - 1.1 Ghz
- RAM - 256 MB(min)
- Hard Disk - 20 GB
- Monitor - SVGA

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# SOFTWARE REQUIREMENT

- Tool - MATLAB R2012
- Operating system - Windows Xp, 7

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# REFERENCES

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- Y. Gu, Q. Wang, H. Wang, D. You, and Y. Zhang, “Multiple kernel learning via low-rank nonnegative matrix factorization for classification of hyperspectral imagery,” IEEE J. Sel. Topics Appl. Earth Observ. Remote Sens., vol. 8, no. 6, pp. 2739–2751, Jun. 2015

