



GRU WITH SPATIAL PRIOR FOR HYPERSENSPECTRAL IMAGE CLASSIFICATION

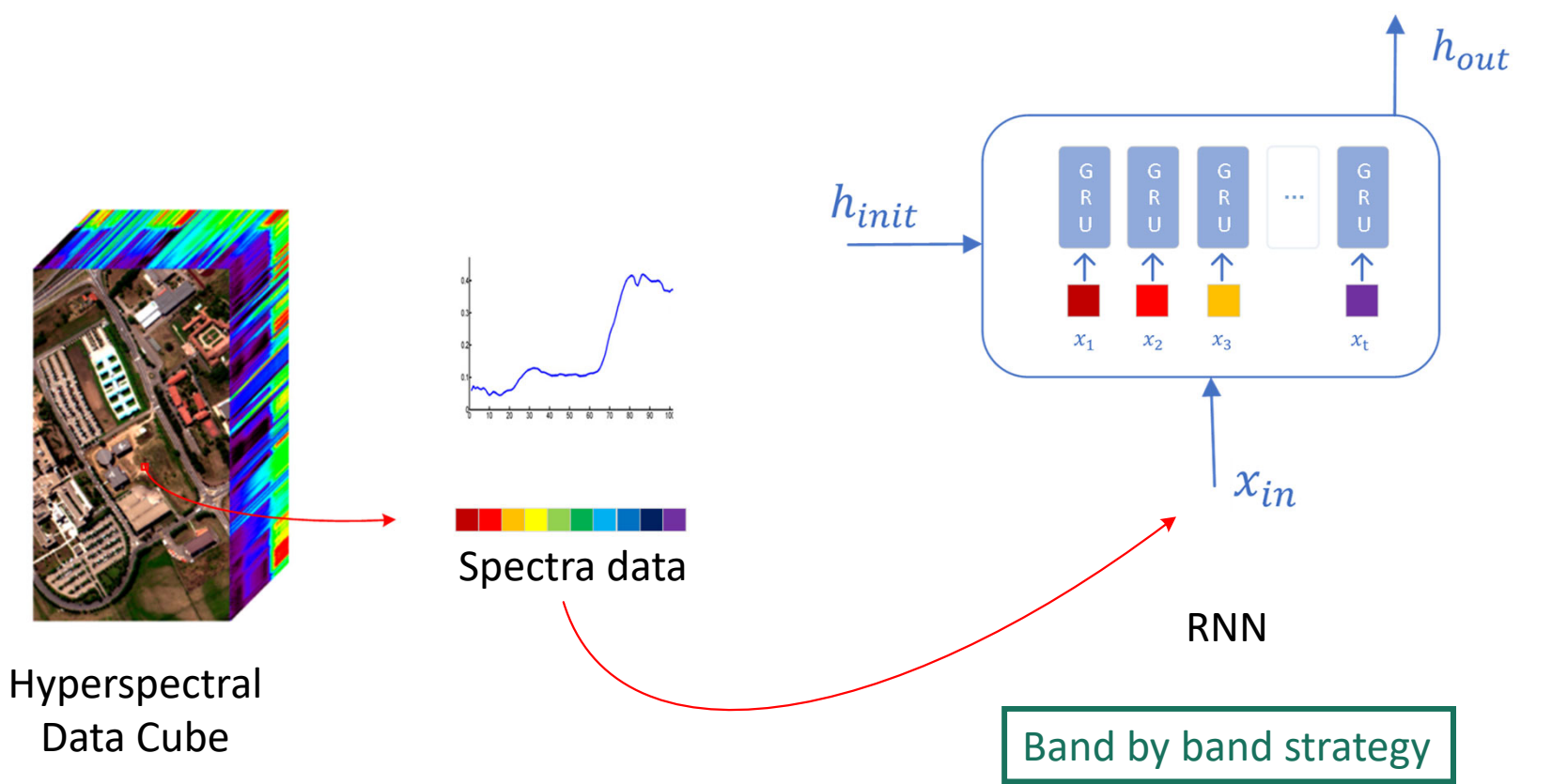
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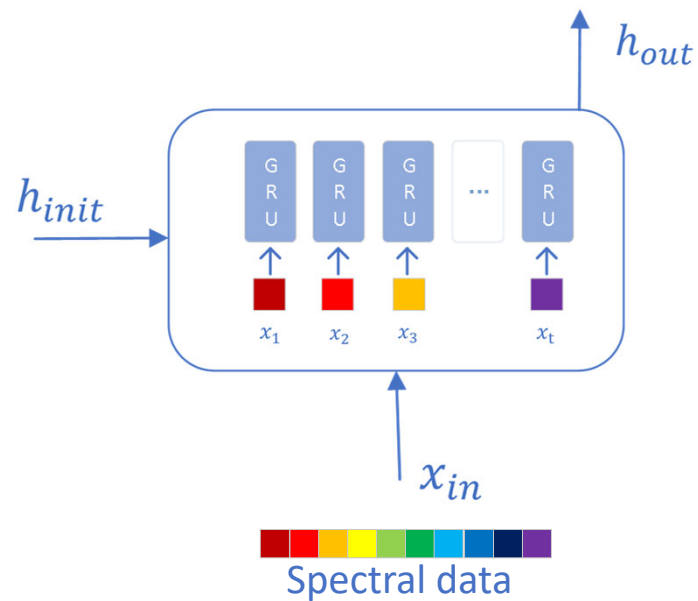


Motivations

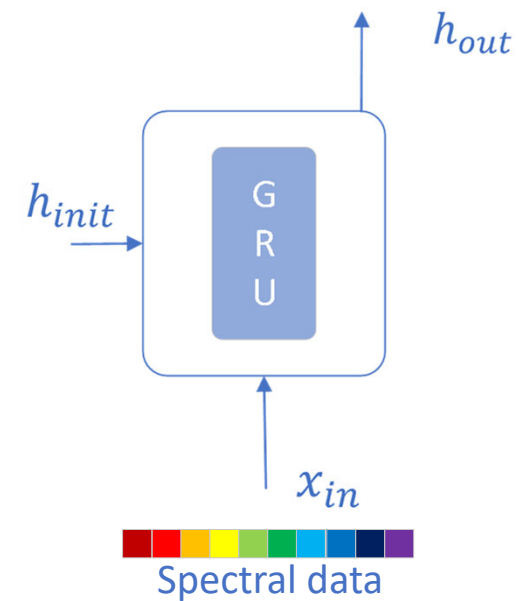




Motivations



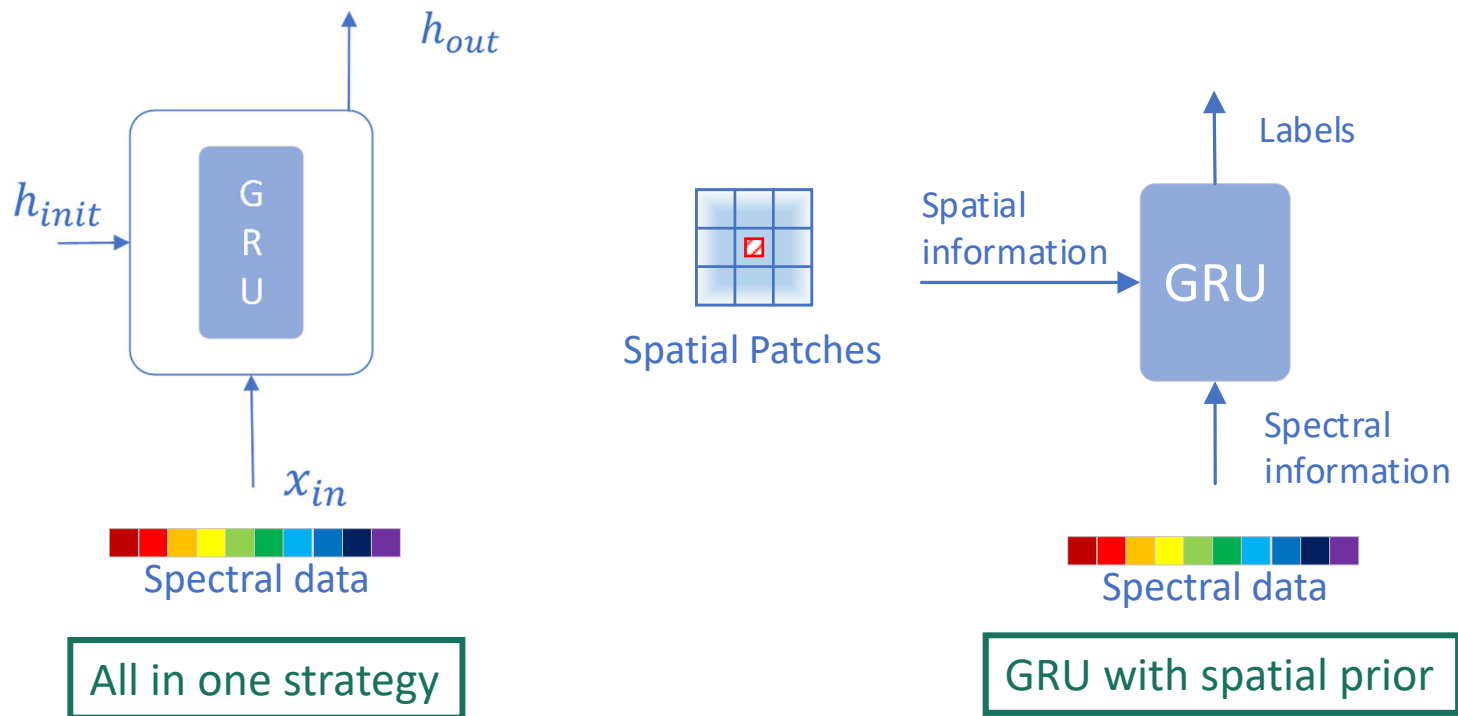
Band by band strategy



All in one strategy



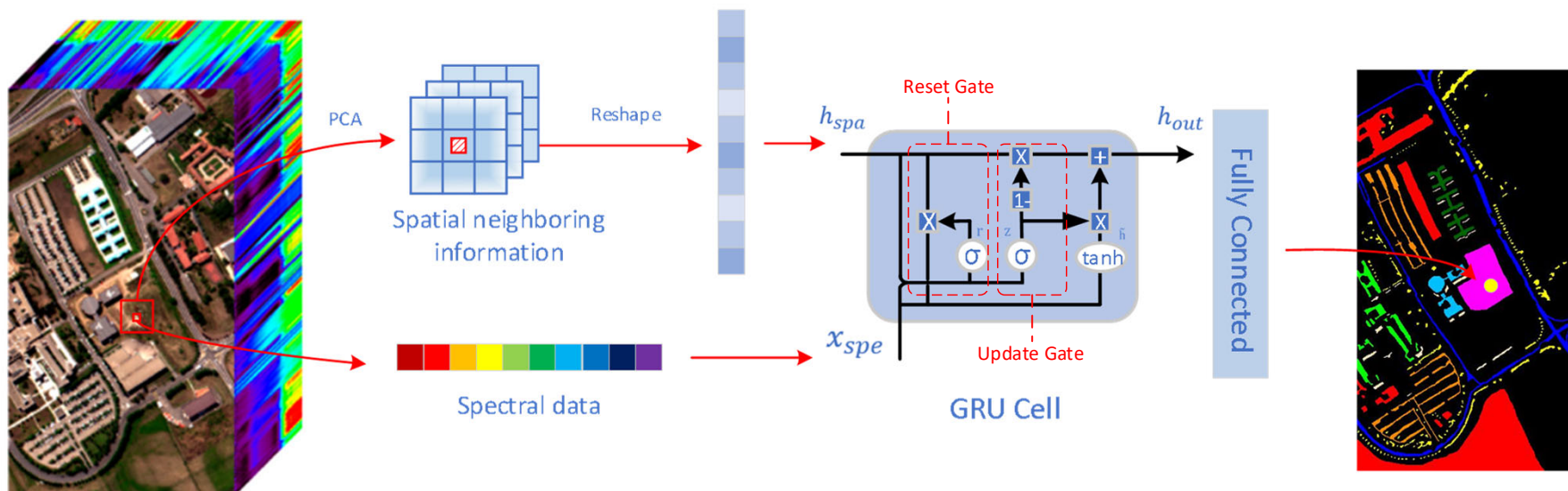
Motivations





Proposed Method

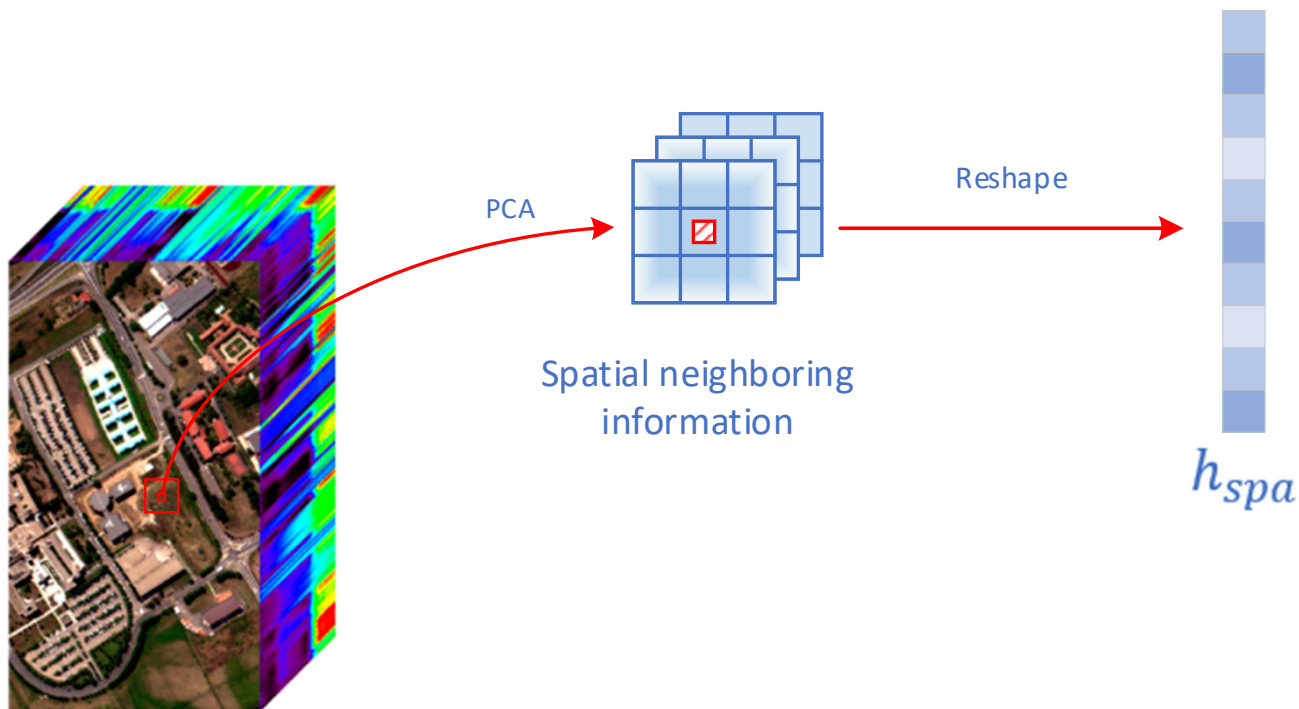
- Overall Architecture



Fusion Spatial information



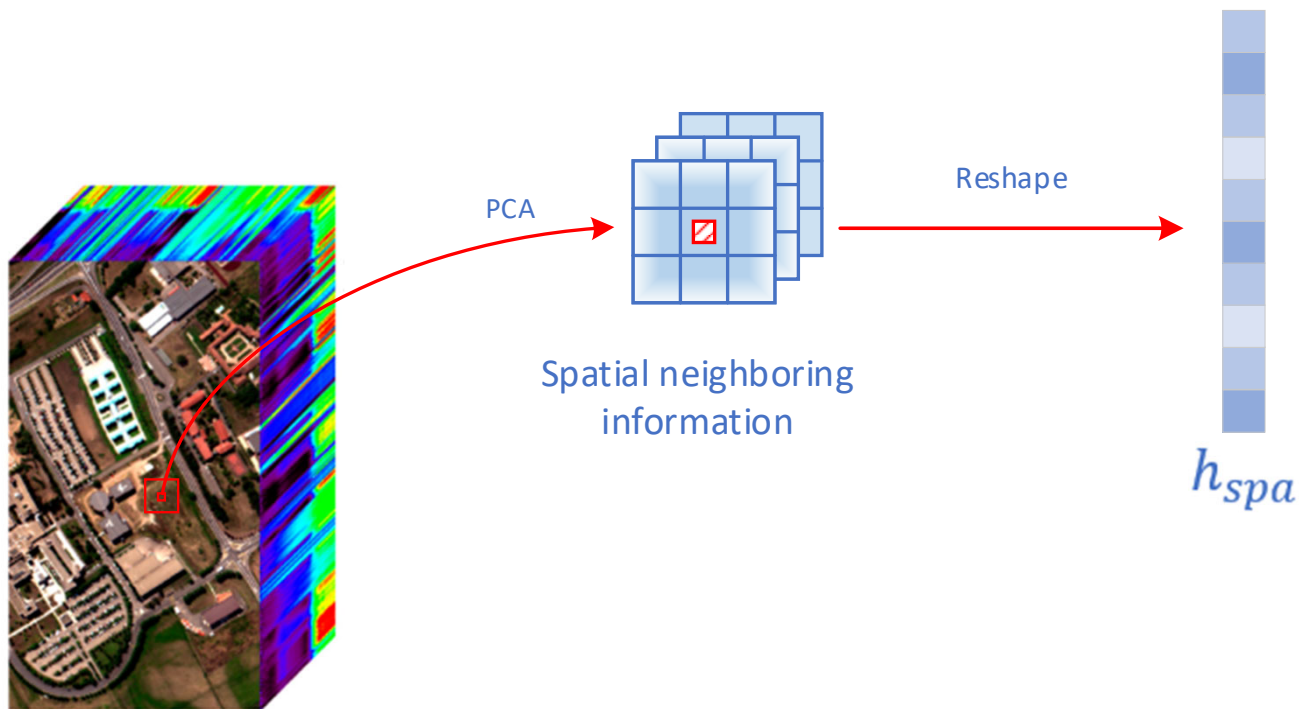
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Proposed Method



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Experimental settings

- Compared Methods: SVM, CNN, RNN(band by band), RNN(all), SPGRU
- Training & Testing Set: Pavia University & Pavia Center
- Evaluate Criteria: OA, AA, kappa

Performance



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Table 1: Classification performance of different methods for the Pavia University dataset. Bold indicates the best result.

Label	SVM	CNN (2D)	RNN (band by band)	RNN (all)	SPGRU
OA	84.43	89.20	91.68	97.24	98.38
AA	88.59	92.20	86.68	88.51	93.82
Kappa	79.94	85.91	88.84	92.34	95.49

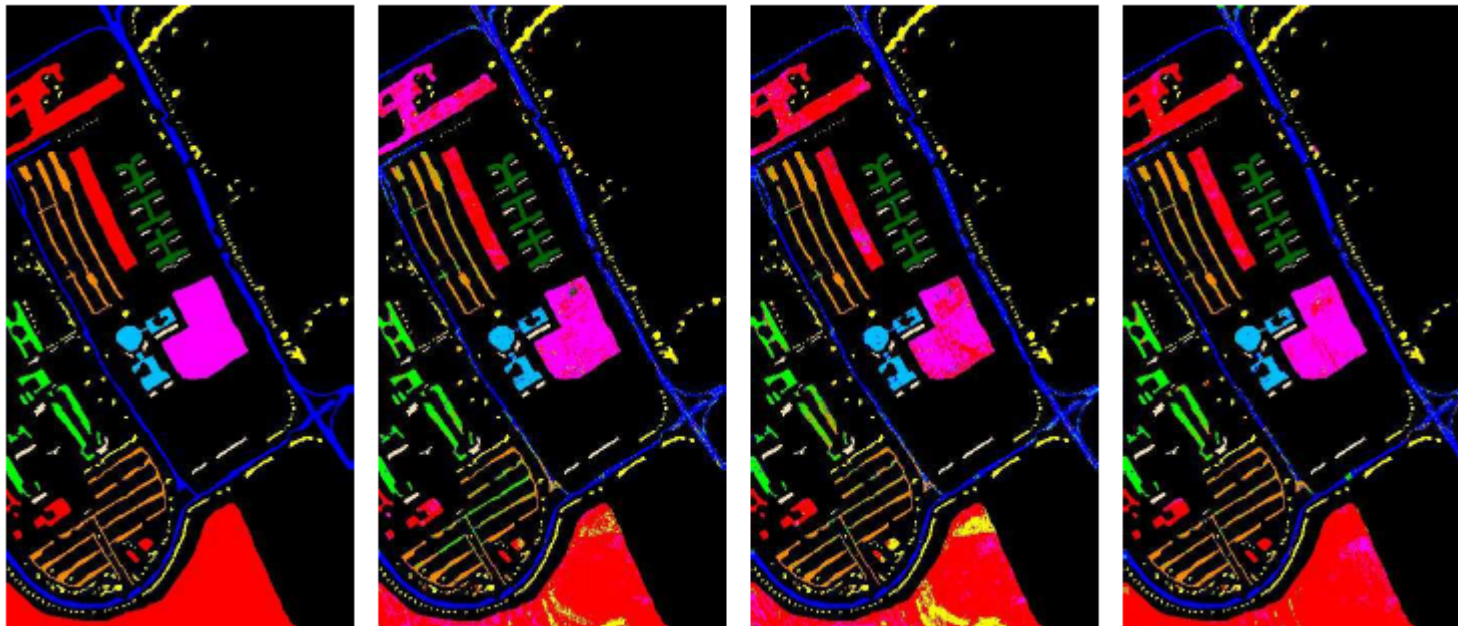
Table 2: Classification performance of different methods for the Pavia Center dataset. Bold indicates the best result.

Label	SVM	CNN (2D)	RNN (band by band)	RNN (all)	SPGRU
OA	84.48	86.20	96.83	97.24	99.73
AA	84.88	91.20	91.12	91.73	95.89
Kappa	83.0	68.91	95.81	96.09	99.18

Performance



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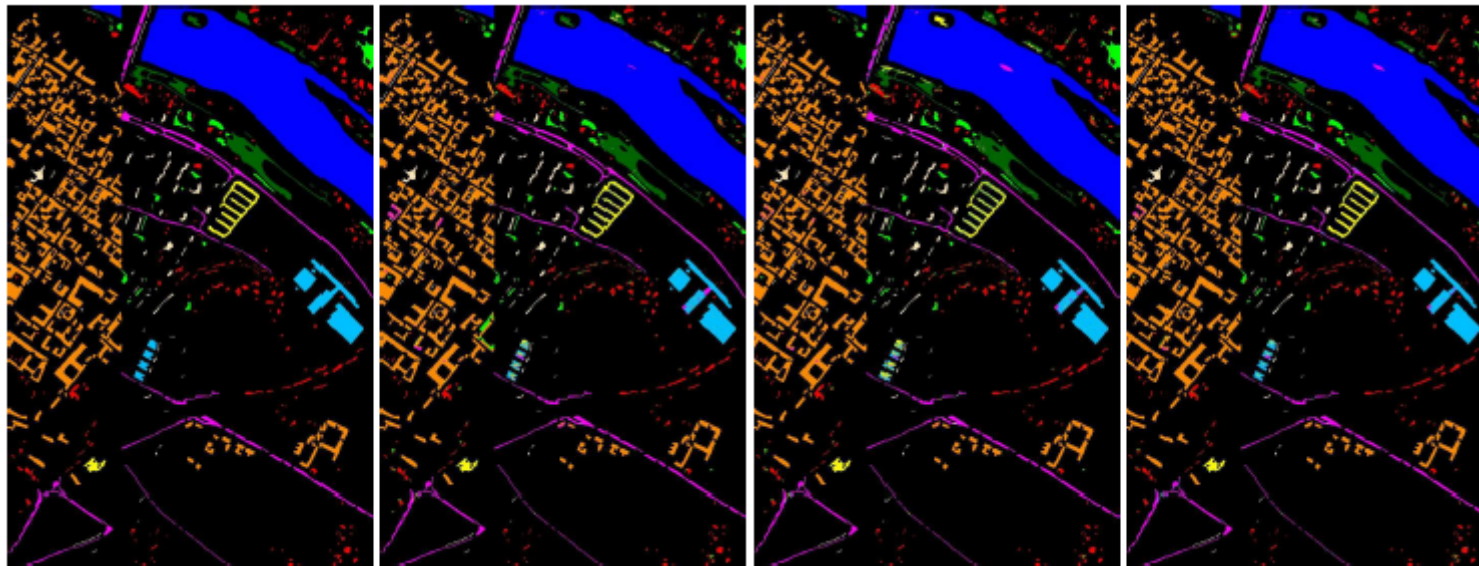


(a) Ground-truth (b)RNN(band by band) (c) RNN(all) (d) SPGRU
Cost of Time (s) : (b) 876.07 (c) 52.51 (d) 56.43

Performance



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(a) Ground-truth (b)RNN(band by band) (c) RNN(all) (d) SPGRU

Cost of Time (s) : (b) 827.25 (c) 44.51 (d) 53.43



Conclusion

- Propose a tiny effective model based on a single GRU
- Introduce a new way to fusion spatial information
- Competitive results and less computational cost.

The image features a large, light gray watermark of the Wuhan University logo on the left side. The logo is circular and contains the text 'UNIVERSITY' at the top, '193' in the middle, and 'WUHAN UNIVERSITY' in Chinese characters at the bottom. The central part of the logo depicts a traditional Chinese building with a curved roof.

THANKS FOR YOUR ATTENTION

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