In the HSI, the pixels in a local patch may have significant appearance variations, and this will affect the final classification accuracy by CNN-based methods.

Motivation-1

Instead of using CNN-based methods, we want to introduce RNN for learning the spatial-spectral feature of the HSI.

Idea-1

The situation of unbalanced and limited labeled pixels in the HSI is severe.

Motivation-2
Inspired by data augmentation, we want to augment the cropped patches for those limited label pixels before being fed into neural networks.

**Multi-scanning strategy:** In order to feed a local patch into RNN, we must transfer the patch into the sequence. But there's no fixed scanning direction exists. Take 3*3 patch as an example. Start from first pixel.
In 16 directions, each of them is paired with another one. Forward and backward direction sequences are better to construct a bidirectional-RNN.

My method can fully explore the spatial and spectral information together to discriminate each pixel.

The results by my method become more accurate and smoother in the flat region.

The boundary or outlines of regions are clearer.

We hope it is a viable alternative for using CNN-based method in this task.

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2. The results by my method become more accurate and smoother in the flat region.
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Thank you