

What is the problem?

The problem addressed in this paper is the challenge of efficiently and accurately extracting tabular data from images. Manual extraction of table data is inefficient and limits subsequent analysis. The authors aim to develop an automated algorithm for table data extraction using optimized OCR technology.

What has been done earlier?

Previous approaches mentioned in the paper include:

- DeepDeSRT
- TableNet
- DeepTabStR

These methods focused on recognizing table rows and columns for table structure recognition. However, they had limitations in terms of accuracy and performance, especially with complex or low-quality table images.

What novel solution proposed by the authors to solve the problem?

The authors propose a novel solution called CRCRNet (standing for Convolutional Recurrent Column-Row Network). Key features of their approach include:

- Using ResNet as the backbone network with added FPN (Feature Pyramid Network) module and TS-CB (Text Segmentation - Core and Border) module to improve edge distribution detection.
- Optimizing the CRNN (Convolutional Recurrent Neural Network) structure for text prediction.
- Incorporating row reconstruction and column reconstruction modules to enhance recognition and prediction capabilities.
- Integrating text recognition prediction and table reconstruction into a complete table recognition algorithm.
- Implementing a self-learning approach to handle various forms of tabular data and continually improve the model's performance.

The CRCRNet model showed superior performance compared to previous methods, achieving an average F1 value of 95.33% on the ICDAR2013 dataset.

What are the remaining challenges?

- Dealing with text density and multi-scale characteristics of tabular data.
- Handling blur, noise, and distortion in table images.
- Improving accuracy in detecting and recognizing table structures.

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