

TEXT RECOGNITION IN IMAGES – DEEP LEARNING ERA

Finding Text in the images has already exist from the decades and also this is one of the finest applications of the coupled domain computer vision with NLP. Detection of text from the natural scene images, real world images are one of the increasing research topics. A few examples are image search, instant translator. It is also famously known as Optical character recognition where the complex text is recognized by deep neural networks in the real-world images. A high-level difficulty in the main stream are

1. **Diversity, variability, availability of text in natural scenes:**
Text in the images can be in different languages, colors, fonts, orientations, shapes.
2. **Interference of backgrounds:**
Background of the text in images are unpredictable. There may be many hindrance and objects dominating the text.
3. **Imperfect image conditions:**
Quality of the images, Noise, low resolution, severe distortions.

Over this decade there are many different appears who came up with advanced deep model architectures to find the optimal solution of identifying the complex text and words in improper and natural images. Mainly papers focused on few things to address the existing problem and achieve the state-of-the-art.

1. Target oriented algorithms and datasets
2. Advanced model technologies

Methodologies in the deep learning era are methods in the recent years are characterized by two distinctions

1. Most methods utilize deep learning-based models;
2. Most researchers are approaching the problem from a diversity of perspectives.

In this paper I would like to classify existing methods in a top-down approach in following aspects

1. Text detection and localization in natural images

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2. Recognition system that converts the detected text region into linguistic symbols
3. End-to-End system that performs state-of-the-art

Under each point section I try to explain the beginning to recent works developments using multiple survey papers in the OCR based state-of-the-art.