先端科学技術研究科　修士論文要旨

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要旨

In practice, it is very common that a natural image gets blurry for various reasons and this kind of degradation usually create significant disruption for subsequent computer vision (CV) tasks such as target detection and image recognition. The single Image deblurring (short for deblurring) problem is a relatively old research topic, the early research on computational post-processing deblurring was raised from the 1960s. And due to the important role of image deblurring in modern CV systems, a number of deblurring methods have been proposed in order to restore latent sharp images from blurry inputs. Furthermore, with the revival of deep learning technique in CV research after the 2010s, the Deeplearning-based (DL-based), data-driven deblurring methods have emerged, comparing to the traditional approaches, these methods demonstrate the strong advantages in terms of performance and practicality in dealing with natural blurry images. However, in view of the ill-posed nature and the complexity of various image degradation in practice, finding a practical and universal deblurring method still remains an open problem. In this article, we give a systematic introduction on the single image deblurring problem. Including the mathematical models of general imaging process and several common types of image blur in practice; the theoretical analysis of the image restoration problem; a review of historical and recent representative works in the field of deblurring. Besides, we give a comparative benchmark on a group of publicly available and representative deblurring methods, as well as a discussion on promising research directions are also presented.