

Statistical Models for Image Processing: Hierarchical Representation of Global and Local Structures of Images

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Abstract

There are two types of image processing. One is with statistical models, and another is without statistical models. Practically, the latter works well, for example, deep neural networks. However, there is a difficulty to give statistical optimality or guarantee. Therefore, the development of statistical models is required theoretically. In this study, I introduce an idea to represent both global and local structure of images as hierarchical statistical models. I will talk about a probabilistic block segmentation model based on quadrees as the model for the global one and a two-dimensional auto-regressive model for the local one, especially in this presentation.