

Asymmetric Generalized Gaussian Mixtures for Radiographic Image Segmentation

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Abstract : In this paper, a parametric histogram-based image segmentation method is used where the gray level histogram is considered as a finite mixture of asymmetric generalized Gaussian distribution (AGGD). The choice of AGGD is motivated by its flexibility to adapt the shape of the data including the asymmetry. Here, the method of moment estimation combined to the expectation-maximization algorithm (MME/EM) is originally used to estimate the mixture parameters. The proposed image segmentation approach is achieved in radiographic imaging where the image often presents an histogram with a complex shape. The experimental results provided in terms of histogram fitting error and region uniformity measure are comparable to those of the maximum likelihood method (MLE/EM) with the advantage that MME/EM method reveals to be more robust to the EM initialization than MLE/EM.

Keywords : AGGD, MME/EM, MLE/EM, Radiography