Asymmetric Generalized Gaussian Mixtures for Radiographic Image Segmentation

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

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