A VARIATIONAL MODEL FOR SEGMENTATION OF OVERLAPPING OBJECTS WITH ADDITIVE INTENSITY VALUE

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Abstract. We propose a variant of the Mumford-Shah model for the segmentation of overlapping objects with additive intensity value. Unlike standard segmentation models, it does not only determine distinct objects in the image, but also recover possibly multiple membership of the pixels. To accomplish this, some *a priori* knowledge about the smoothness of the objects is taken into account in the model. To solve the optimization problem involving geometric quantities efficiently, we apply a multi-phase level set method. Segmentation results on synthetic and real images validate the good performance of our model.

Key words. Image segmentation, Euler's elastica, level set methods, Mumford-Shah segmentation model, additive model, overlapping objects.

AMS subject classifications. 68U10, 65K10

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