



The University of Chicago
Department of Statistics
Master's Seminar

TAKINTAYO AKINBIYI
Department of Statistics
The University of Chicago

An Intensity Based Patchwork of Parts Model For 2D Objects

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ABSTRACT

We develop a deformable model for 2D images and a likelihood based estimation process for training the model using the EM algorithm. An image is modeled as a patchwork of parts which can overlap and move within a small area and can vary in contrast and intensity. A significant benefit is that whereas most deformable models only model a few non-overlapping landmark areas of an image, our model is dense, so close to the whole image is covered by parts which are allowed to overlap. The ability of the parts to vary in intensity and contrast allows them to match various lighting sources. Some strategies are proposed for how to determine the value of unknown variables in a trained model given a new image. These methods prove robust to changes in lighting from the original training set. Examples are presented using face images.