

**IMAGE SEGMENTATION BY MINIMIZING
A CURVATURE DEPENDENT FUNCTIONAL:
APPROXIMATION BY Γ -CONVERGENCE**

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We consider a variational model for image segmentation which is based on the minimization of a functional defined on families of curves. The functional, originally proposed by Terzopoulos, penalizes curvature, length, and number of endpoints of the curves. We show how this functional can be approximated by elliptic functionals defined on smooth functions. The approximation takes place in the sense of De Giorgi's Γ -convergence, and it is close in spirit to the Ambrosio and Tortorelli approximation of the Mumford-Shah functional. The Γ -convergence result allows the use of numerical methods developed for related problems, such as image inpainting.