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Jung-Ha An* (jan@csustan.edu), One University Circle, Turlock, CA 95382, and **Paul Bigeleisen** and **Steven Damelin**. *Identification of Nerves in Ultrasound Scans Using a Modified Mumford-Shah Functional and Prior Information.*

Ultrasound scans have many important clinical applications in medical imaging. One of clinical applications is to find nerves. One of the skills necessary to conduct ultrasound model, several numerical guided nerve blocks is the ability to recognize the nerves, vessels, muscles and bones in sagittal and axial cross sections. The goal of this talk is to present an efficient image segmentation algorithm which identifies nerves in ultrasound scans. A new region based variational model is proposed using a modified piecewise constant Mumford-Shah functional and prior information. The region of interests are extracted by using Γ -approximation to a piecewise constant Mumford-Shah functional. However, this method only is not able to accommodate all types of imaging difficulties including noise, artifacts, and loss of information. Therefore, the prior information is incorporated with the distance function. The distance function consists of the global rigid transformation and local non-rigid deformation. The proposed model is applied to healthy human neck ultrasound images. The preliminary numerical results show the effectiveness of the suggested algorithm and is compared to an existing piecewise constant Mumford-Shah model and expert results. (Received September 20, 2011)