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Jue Wang*, Union College, 807 Union St., Schenectady, NY 12308. *Automatic Detection of Breast Masses and Location of the Prostate.*

A fast Enclosure Transform is developed to localize complex objects of interest from ultrasound images. This approach explores spatial constraints on regional features from a sparse image feature representation. Unrelated, broken ridge features surrounding an object are organized collaboratively, giving rise to the enclosure of the object. Three enclosure likelihood measures are constructed, consisting of the enclosure force, potential energy, and encloser count. In the transform domain, the local maxima manifest the locations of interest objects, for which only the intrinsic dimension is known a priori. I will demonstrate two medical applications in detecting (1) suspicious breast masses in screening breast ultrasound, and (2) the location of the prostate in trans-abdominal ultrasound for verification of patient positioning in radiotherapy treatment of prostate cancer. (Received September 23, 2018)