Minimization of boundary curvature is a classic regularization technique for image segmentation in the presence of noisy image data. Techniques for minimizing curvature have historically been derived from gradient descent methods which could be trapped by a local minimum and, therefore, required a good initialization. Recently, combinatorial optimization techniques have overcome this barrier by providing solutions that can achieve a global optimum. However, curvature regularization methods can fail when the true object has high curvature. In these circumstances, existing methods depend on a data term to overcome the high curvature of the object. Unfortunately, the data term may be ambiguous in some images, which causes these methods also to fail. To overcome these problems, we propose a contrast driven elastica model (including curvature), which can accommodate high curvature objects and an ambiguous data model. We demonstrate that we can accurately segment extremely challenging synthetic and real images with ambiguous data discrimination, poor boundary contrast, and sharp corners. We provide a quantitative evaluation of our segmentation approach when applied to a standard image segmentation data set.