This paper presents the use of deformable templates for image retrieval where a template line drawing sketch can be detected in the target image, irrespective of its position, size, rotation, and smooth deformation transformations. First, potential template positions are found in the target image using a modified version of the Generalized Hough Transform and Watershed Segmentation, irrespective of position, scale, and orientation. Each candidate position is then used to find a match by allowing the template to undergo a grid deformation transformation.

The deformed template contour is matched with the target by measuring 1) the smoothness of the matching vector between edge elements of target and transformed template and 2) the similarity in contour tangent direction at that edge element. The deformation parameters are updated via relaxation using the Gibbs Sampler on the energy cost function to find the best match between the deformed template and the target image. To avoid getting stuck in a local minimum solution, we include a novel coarse-and-fine model for contour matching into the energy functional. The matches that meet the preset cost criteria are reported as the result of image search as shown in the experiments.