Reconstruction of algebraic surfaces from their silhouettes

We provide an algorithm to reconstruct a smooth algebraic surfaces in three-dimensional projective space from its silhouette, i.e., the branching locus of a single projection to the projective plane. Later we will focus on the case of smooth cubic surfaces, whose silhouette is approximated by a cloud of scattered points. Unfortunately, being a silhouette is unstable under small perturbation. Therefore the goal is to find a planar curve approximating the input points together with the additional property of being the silhouette.