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Conic Separation of Finite Sets. II: The Non-Homogeneous Case

[For part I of this article see this journal 21 (2013), Number 1.]

We address the issue of separating two finite sets in \mathbb{R}^n by means of a suitable revolution cone

$$\Gamma(z, y, s) = \{x \in \mathbb{R}^n : s\|x - z\| - y^T(x - z) = 0\}.$$

One has to select the aperture coefficient s , the axis y , and the apex z in such a way as to meet certain optimal separation criteria. The homogeneous case $z = 0$ has been treated in Part I of this work. We now discuss the more general case in which the apex of the cone is allowed to move in a certain region. The non-homogeneous case is structurally more involved and leads to challenging nonconvex nonsmooth optimization problems.

Keywords: Conical separation, revolution cone, alternating minimization, DC programming, classification.

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