

Center-based l_1 -clustering method

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We consider the l_1 -clustering problem for a data-points set $\mathcal{A} = \{a^i \in \mathbb{R}^n : i = 1, \dots, m\}$ which should be partitioned into k disjoint nonempty subsets π_1, \dots, π_k , $1 \leq k \leq m$. Motivated by the smooth k -means method (l_2 -method) (Kogan, 2007; Teboulle, 2007), a very efficient iterative process for solving a one-dimensional center-based l_1 -clustering problem is constructed. The basic properties and convergence of this iterative process is analyzed. A corresponding algorithm is given, which in only few steps gives a stationary point and the corresponding partition. The method is illustrated and visualized on the examples. Generalization to n -dimensional case will be formulated.