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On the circle closest to a set of points. (English) Zbl 0994.90088
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Summary: The objective of this paper is to find a circle whose circumference is as close as possible to a given set of points. Three objectives are considered: minimizing the sum of squares of distances, minimizing the maximum distance, and minimizing the sum of distances. We prove that these problems are equivalent to minimizing the variance, minimizing the range, and minimizing the mean absolute deviation, respectively. These problems are formulated and heuristically solved as mathematical programs. Special efficient heuristic algorithms are designed for two cases: the sum of squares, and the minimax. Computational experience is reported.

MSC:

90B80 Discrete location and assignment

Cited in **22** Documents

Software:

MOD-DIST; AMPL; MENU-OKF; SITATION

Full Text: DOI

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