

Re: A question on algebraic circle fitting

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Thomas Mautsch wrote:

Given a finite number of points in the plane, (x_1, y_1) , (x_2, y_2) , ..., (x_n, y_n) , the "algebraic way" to fit a circle to these points is to minimize the sum

$$\sum (x_i^2 + y_i^2 + 2 D x_i + 2 E y_i + F)^2, i = 1..n$$

over the variables D,E,F.

Is it correct that the resulting minimizers will satisfy the condition

$$D^2 + E^2 \geq F ?$$

Under what conditions will minimizers D,E,F exist? – A necessary condition is that not all points (x_i, y_i) lie on a common line in case $n \geq 3$. Is this condition also sufficient, or what other conditions are there?

<http://huizen.dto.tudelft.nl/deBruijn/programs/delphi.htm#BFC>

Read the paragraph "Method by RI" (: Robert Israel). Yes, it is correct that the resulting minimizers will satisfy the condition $D^2 + E^2 \geq F$ as far as I can see.

Han de Bruijn

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