博士论坛

正交距离椭圆拟合法的推广及其实现

张庆丰

暨南大学 计算机科学系，广州 510632

摘要　　同心椭圆弧的拟合问题存在于计算机视觉、天文图像处理、CAD等领域。将椭圆的正交几何距离拟合算法推广到多个同心椭圆弧拟合上，提出一种同心椭圆弧拟合的处理方法。文中还给出了该方法实现的具体步骤和伪代码，该方法将单一圆、椭圆的拟合以及多个同心圆和椭圆的拟合统一了起来。实验表明该方法稳定、有效。
关键词　　椭圆拟合　多弧拟合　几何拟合　非线性最小二乘
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Extension of orthogonal distance method of ellipse fitting and its implementation

ZHANG Qing-feng

Department of Computer Science，Jinan University，Guangzhou 510632，China

Abstract

The fitting problem of concentric elliptical arcs exists in astronomy image processing，computer vision and CAD.To solve the problem，the least-square orthogonal distance method of single ellipse's fitting is extended，and its algorithm is proposed.The steps and pseudocodes of its implementation are also presented.The extended method unifies several ones which are for single circle fitting，single ellipse fitting and multiple concentric circles or ellipses fitting.All these fitting cases can be handled by one procedure.Experimental results show that the extended method is more accurate and stable than single arc fitting one.

Key words　ellipse fitting　multiple arcs fitting　geometric fitting　nonlinear least squares

通讯作者　张庆丰 zhang.qingfeng135@gmail.com

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