

图形、图像、模式识别

## 改进的高效Camshift跟踪算法

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**摘要** Camshift是一种应用颜色信息的跟踪算法,它对做加速度的运动物体跟踪效果不够稳定和强壮,从准确预测目标位置及缩小目标搜索范围入手对Camshift算法进行了改进。该算法使用运动目标加速度运动位移方程预测下一时刻目标可能出现的位置,使用预测位置误差方程估计运动目标搜索范围,并使用IIR滤波器对目标运动速度、加速度等参数自适应地修正。实验证明,改进的Camshift有效地克服了Camshift算法自身的缺陷,即使运动目标做加速运动时,也可准确地预测运动目标的位置,缩小目标搜索范围,进而提高目标跟踪速度。

**关键词** [目标跟踪](#) [Camshift算法](#) [位置预测](#)

**分类号** [TP242.6+2](#)

## Improved and efficient object tracking algorithm based on Camshift

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### Abstract

Camshift is a color-based tracking algorithm. In the process of object tracking, it is not strong and stable enough to tracking the moving object which undergoes accelerated motion. The tracking speed is raised by virtue of predicting the position that a moving object arrives at the next time and reducing the search region. In the tracking algorithm, an acceleration equation is calculated for estimating the new position of a moving object, and an error formula of predictive position is used to adjust the moving object search region automatically. In order to predict the future position accurately and simplify computation complexity, by using IIR filters, several motion parameters such as velocity and acceleration are updated adaptively each frame. Several experiments are given to show that the proposed algorithm can improve object tracking speed by means of predicting a moving object position and reducing search region even if this moving object undergoes accelerated motion.

**Key words** [object tracking](#) [Camshift](#) [position prediction](#)

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