

图形、图像、模式识别

## 基于Camshift算法的光笔投射点的实时跟踪

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**摘要** 为实现对光笔投射点的实时跟踪, 采用了Camshift跟踪算法, 但是该算法在动态复杂背景及在颜色相似的背景区域中不能很好地进行跟踪。因此, 提出了改进方法。首先, 引入红色滤镜, 以此改变Camshift算法颜色特征提取的效果, 从而削弱了背景的影响, 突出了目标, 很好地克服了背景中的颜色干扰, 使动态复杂背景下光笔投射点的跟踪具有较高的鲁棒性和实时性; 然后通过改变区域选择方式, 达到了自动跟踪的效果; 最后, 通过OpenCV实现了对光笔投射点的实时跟踪。实验结果表明, 该方法在光笔投射点实时跟踪上是十分有效的。

**关键词** [光笔](#) [实时跟踪](#) [Camshift跟踪算法](#) [红色滤镜](#) [跨平台的计算机视觉库 \(OpenCV\)](#)

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## Real-time tracking of shoot point from light pen based on Camshift

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### Abstract

To realize the real-time tracking of the shoot point from light pen, the Camshift tracking algorithm is chosen, but it is difficult to track the point with dynamic and complicated background and in case that there is similar color with the shoot point. So, an improved method is proposed. Firstly, a red filter which weakens the effect of background, and makes the object prominent is introduced to improve the effect of color extraction based on Camshift algorithm. The red filter makes the algorithm overcome disturbance of the background color, and makes the tracking of the shoot point with high real-time performance and strong robustness. Then the automatic tracking of the shoot point from light pen is realized by changing the manner of selecting region. Finally, the real-time tracking of the shoot point from light pen using OpenCV is realized. The experimental results indicate that color object is efficiently tracked even with dynamic and complicated background by the new method which is presented.

**Key words** [light pen](#) [real-time tracking](#) [Continuously adaptive mean shift \(Camshift\)](#) [red filter](#)  
[Open Source Computer Vision Library \(OpenCV\)](#)

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