

## Accepted Manuscript

Title: Fast circle detection algorithm based on sampling from difference area

Authors: Lianyuan Jiang, Zhiwen Wang, Yongqiang Ye, Jianbing Jiang



PII: S0030-4026(17)31701-1  
DOI: <https://doi.org/10.1016/j.ijleo.2017.12.064>  
Reference: IJLEO 60186

To appear in:

Received date: 19-4-2017  
Accepted date: 14-12-2017

Please cite this article as: Jiang L, Wang Z, Ye Y, Jiang J, Fast circle detection algorithm based on sampling from difference area, *Optik - International Journal for Light and Electron Optics* (2010), <https://doi.org/10.1016/j.ijleo.2017.12.064>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## Fast circle detection algorithm based on sampling from difference area

Lianyuan Jiang<sup>a,b,c</sup>, Zhiwen Wang<sup>b</sup>, Yongqiang Ye<sup>a,\*</sup>, Jianbing Jiang<sup>a,b,c</sup>

<sup>a</sup>College of Automation Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing 210016, China

<sup>b</sup>College of Computer Science and Communication Engineering, Guangxi University of Science and Technology, Liuzhou 545006, China

<sup>c</sup>Guangxi Experiment Center of Information Science, Guilin 541004, China

\* Corresponding author. Tel.: +86-25-84892305-6020; fax: +86-25-84892368.

*E-mail address:* melvinye@nuaa.edu.cn (Y. Ye).

**Abstract:** The detection of circular targets is a basic problem in computer vision, especially in pattern recognition. Due to the low effective sampling rate, circle detection methods based on random sampling (like randomized Hough transform and randomized circle detection algorithm) result in heavy computation load and slow detection speed. Targeted at this problem, this paper proposes a fast circle detection algorithm based on the difference area sampling. When a candidate circle is determined to be a false circle, a number of samples are taken from its difference area if the number of points on the candidate circle reaches a certain number. And the sampling efficiency in the difference area is significantly higher than that of the random sampling, thus increasing the speed of the circle detection. A large number of experimental results also validate this advantage. The proposed algorithm has the same detection accuracy and robustness as the original algorithm, and the proposed method of sampling from the difference area boasts great potential in practical application as it can be directly applied to randomized Hough transform, randomized circle detection algorithm and their improved versions.

---

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات