APEM journal

Advances in Production Engineering & Management
Volume 18 | Number 1 | March 2023 | pp 49–65
https://doi.org/10.14743/apem2023.1.456

ISSN 1854-6250
Journal home: apem-journal.org
Original scientific paper

Spatial position recognition method of semi-transparent and flexible workpieces: A machine vision based on red light assisted

Bi, Q.L.[a], **Lai, M.L.**[b,*], **Chen, K.**[b], **Liu, J.M.**[b], **Tang, H.L.**[b], **Teng, X.B.**[a], **Guo, Y.Y.**[a]

[a]School of Marine Engineering, Guangzhou Maritime University, Guangzhou, P.R. China
[b]School of physics and optoelectronic Engineering, Guangdong University of Technology, Guangzhou, P.R. China

ABSTRACT

In the automatic sorting process, overlapping translucent and flexible workpieces on the conveyor belt, blurring the imaging edge features of translucent and flexible workpieces is a challenge to locate the upper and lower workpieces spatially, we propose a method for locating translucent and flexible workpieces spatially under the overlapping environment in conjunction with the most common automatic sorting of translucent and flexible workpieces such as infusion tube drip buckets. Firstly, we propose a rectangular surface light source based on 650 nm band and monocular CCD for imaging translucent workpieces such as infusion tube drip buckets and optimize the imaging parameters. Secondly, we study a feature matching recognition algorithm for flexible workpieces that are prone to deformation, construct a mapping relationship between the position of overlapping layers and imaging quality of translucent and flexible workpieces such as infusion tube drip buckets based on clarity and information entropy, and establish The mapping relationship between the position of the overlapping layers and the imaging quality of translucent and flexible workpieces such as infusion tube drip buckets is constructed based on clarity and information entropy, and a local spatial coordinate conversion model is established. Finally, the spatial positioning coordinates of overlapping and non-overlapping translucent and flexible workpieces in the local coordinate system are identified, and the results show that the imaging method and theory can be effectively applied to the identification of overlapping and spatial positioning coordinates in the automatic sorting of translucent workpieces such as infusion tube drip buckets.

ARTICLE INFO

Keywords:
Machine vision;
Image processing;
Visual recognition;
Feature matching;
Imaging quality;
Red light;
Translucent and flexible workpieces;
Infusion tube drip bucket;
Smart manufacturing

**Corresponding author:*
2112115045@mail2.gdut.edu.cn (Lai, M.L.)

Article history:
Received 14 March 2023
Revised 12 April 2023
Accepted 15 April 2023

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