

Methods for Identifying Weld Seams Using Fiber Optic Sensors





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Welding Seam Detection and Tracking Based on Laser

Weld seam detection and tracking using intelligent techniques is a common task in robotic welding. In this study, vision-based robotic welding is

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Structural Health Monitoring Fiber Optic Sensors

It then presents a detailed analysis of the fibre-based monitoring solutions available, their concept of operation and operational (measuring) characteristics and capabilities and closes with a

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Determination of 3-D weld seams in ship blocks using a laser vision

In this paper, typical image patterns acquired in the sensing of the 3-D weld seam are classified. To identify the pattern categories, several parameters of the 2-D image data were tested,

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Coarse-to-Fine Detection of Multiple Seams for Robotic Welding

Our method is further accelerated by using a pre-trained deep learning model to ensure both efficiency and generalization ability. The performance of the proposed method has been

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Coarse-to-Fine Detection of Multiple Seams for Robotic Welding



Our method is further accelerated by using a pre-trained deep learning model to ensure both efficiency and generalization ability. The performance of the proposed method has been comprehensively

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All-fiber optic integration type of weld seam image sensing system

An automatic seam tracking system designed for sheet metal arc welding was constructed with a sensor. Through experiments, it was revealed that the system had an excellent seam tracking

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Data-driven artificial intelligence methods for real-time welding

This necessitates a shift toward in process monitoring systems that detect defects during the welding operation enabling immediate corrective action. The study evaluates the effectiveness of

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Weld seam detection and extraction method based on S-YOLO

This research offers a lightweight, efficient solution for weld seam recognition and feature point extraction, reducing resource consumption and broadening deep learning applications in industrial

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All-fiber optic integration type of weld seam image sensing system

Using Moiré Pattern technology, a three-dimensional welding seam image sensing system was introduced. A pair of gratings with a small angle, a CCD camera and other optical parts made

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Automatic Identification of Multi-Type Weld Seam Based on Vision Sensor

To overcome the challenges derived from the weld seam diversity, in this paper, the silhouette-mapping was selected as the weld seam intermedium and a multi-type weld seam automatic identification

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Weld seam feature point extraction using laser and vision sensor

In this work, a method to improve the quality of the centerline by constructing a more stable centerline has been presented to obtain the pixel location of the welding seam point in the x-y

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Accurate detection of weld seams for laser welding in

This paper presents a neural network architecture that automatically detects the weld



seam edge between two metals with high accuracy. We augment this system with

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ScE-YOLO: an efficient approach for weld seam

However, due to adverse factors such as on-site lighting and dust, accurate weld seam localization remains a key challenge for automated grinding

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Determination of 3-D weld seams in ship blocks using a laser vision

Request PDF , Determination of 3-D weld seams in ship blocks using a laser vision sensor and a neural network , In automatic welding of a 3-D weld seam, a vision sensor is applied to

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How to Select the Right Laser Weld Seam Tracking

Selecting the right laser weld seam tracking solution involves considering the specific requirements of your welding process, its environmental conditions, the materials

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Dataset for weld seam analysis and discontinuity prediction in laser

Laser beam welding is one of the state-of-the-art methods for advanced joining processes and is applied in many industrial tasks . As the demands on product quality continue to increase,

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A novel weld seam detection method for space weld seam of narrow



A weld seam vision sensor and its corresponding image process algorithm for the detection of narrow butt joint weld seam with width less than 0.1 mm are proposed in this article.

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Sensors for Weld Seam Finding

- Laser-profile or optical triangulation sensors are commonly used for weld seam finding because they can generate precise profiles of the weld joint. -

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Real-Time Seam Extraction Using Laser Vision Sensing:

Laser vision sensors for weld seam extraction face critical challenges due to arc light and spatter interference in welding environments. This paper

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Intelligent Recognition of Weld Seams on Heat Exchanger Plates and

The large-format, long-distance welding of heat exchanger plates is widely used in shipbuilding, oil and gas, power and metallurgical equipment, rail transportation, and other fields. To

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Advances in weld seam tracking techniques for robotic welding: A

In this paper, different sensors and techniques used for seam tracking task in robotic welding have been discussed in detail. Each sensor has different method or technology of weld seam

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Fatigue weld crack detection using distributed fiber optic strain sensing



Specifically, this paper reviews frequently employed sensors including fiber optic and piezoelectric sensors, and four promising damage detection methods, namely, transmittance

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Weld seam object detection system based on the fusion of 2D

This study introduces a novel approach that addresses the limitations of existing methods by integrating 2D image processing with 3D point cloud analysis, enhanced by interpretable

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An image segmentation-based localization method for detecting weld

This study proposes an automatic and rapid method for measuring the dimensions of weld seams in hull structures using 3D laser scanning technology. Traditional contact measurement



Weld Seam Tracking and Detection Method Based on Structured Light

Traditional weld seam detection methods primarily rely on manual measurement using vernier calipers, which suffer from poor adaptability and low sensitivity. In this work, we introduce a tracking and

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