

Special Session on

**“Vision-based Automatic Defect Inspection in Complex Industrial
Environment”**

Organized by

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Call for Papers

With the continuous improvement of the level of automation and intelligence in modern industry, a large number of industrial products are manufactured every day to meet people's increasing materialistic consuming demand. Meanwhile, due to the intensification of competition and the ultimate pursuit of product quality, the enterprises pay special attention to product quality control so that the product performance and quality can be guaranteed simultaneously. The occurrence of defects in products is often inevitable in manufacturing process due to the extremely complicated production processes, equipment failures, environmental interference, human errors, etc. The existence of defects not only affects the appearance and comfort of products, but also have an adverse effect on their performance. Therefore, defect inspection of products is important for industrial production and has become an active research topic that has attracted the attention of both theorists and industrial practitioners in recent years.

The manual inspection is commonly used for defect inspection in many companies and has the disadvantages of low efficiency, high labour intensity, low inspection accuracy and stability, and poor real-time performance. The vision-based automatic defect inspection can overcome

the shortcomings of manual inspection and has become one of the most attractive solution for defect inspection. In practical industry, there are numerous kinds of products with various size, shape, and material, and the defects in products can also be in varied forms, which make the vision-based automatic defect inspection very challenging; Moreover, the problems of complex background, uneven lighting condition, complicated production process and noise have made it even more difficult. Therefore, vision-based automatic defect inspection in complex industrial environment is a challenging and meaningful task.

Topics of the Session:

This special session provides a platform for researchers and practitioners to present robust, fast, and effective methods for automatic visual defect inspection in complex industrial environment. The topics of the Session include, but are not limited to the following areas:

- Visual inspection techniques in industrial automation and intelligence
- Vision-based product quality control
- Establishment of stable and reliable optical imaging system
- Construction of defect image set and advanced image augmentation methods
- Image pre-processing methods
- Defect object segmentation methods
- Defect feature extraction and feature selection
- Supervised and non-supervised classifiers
- Design, parameter learning, and online implementation of deep neural network models for defect inspection
- Image processing and robot vision
- Industrial demonstration applications of automatic defect inspection