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Short Review

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Application of Machine Vision in Cheese Industries

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ABSTRACT

Image processing has been developed in recent decades from both theatrical and scientifically viewpoints. Regarding this dramatic race of growing, it is easily to be traced the presence of image processing in different branches of science and industries. Even it has started applying in food industries. During few recent years, race and accuracy of machine vision method, has been facilitated its application as substituted method of conventional methods of quality measuring. Common methods suffer from being time consuming, low accuracy, high cost. Moreover they have no quality assurance. In contrast, machine vision methods are non-destructive, more stable with better results. These article review different applications of machine vision in cheese industries.

Keywords: machine vision, cheese, dairy industry

INTRODUCTION

Feature extraction has been developed in few recent decades. Its affection also observes in food industries to ensure quality. Routine and conventional quick inspection method of food quality and sorting of agriculture such as UV are too expensive, moreover the results of these methods are not insurable compared to machine vision methods.

Machine vision

Today machine vision as one of the engineering tools in computer networks and use to robot's arms. It can be used in large scale industrial production, producing special parts which need certain time of production, investigation of first material of production, Security system in industrial environments, Quality control of food products, , Machining of small industrial parts.

Procedures

Like, human workers control the quality and the type of products of good, machine vision also by means of both digital camera and image processing does the same. Machine vision parts include few digital cameras, a medium to provide captured images, a processor, software, entrance hardware, appropriate light sources, intelligent lenses, and certain software of image processing, Synchronizing sensor to detect components.

Machine vision areas

Machine vision is related to engineering of image systems in industries and manufacturing as well as covers a wide range of science zones including computer vision, control of equipment, computer networks. It must discriminated

that computer vision has wide concept in dissolving image problems while machine vision is only an engineering method commonly uses in engineering issues.

Application of machine vision in food industries

The possibility of using machine vision in food industries has been known since long time ago. Routine inspection method, manual sorting of agriculture products are time consuming and cost methods.

The technology for capturing image of internal structures

Outer qualities such as color, shape, surface texture, and external defects can investigate by means of camera. However determination and investigation of internal structures is fairly difficult if followed by routine methods. To investigate the quality of food new technologies including MRI, CT, ET and so forth is needed. Ultra sound methods are a good solution for internal targets assessment.

Ultrasound

Ultrasound is novel technology by which internal images are captured and the most application of these methods is in analyzing of meat textures. Analysis of pictures determines the thickness of fat and estimations of meat quality.

Example of using machine vision in dairy industry

Production and designing a product must be dynamic and since plant ingredients can develop cheese taste. Probably they will have more desirability in future. These novel products may require new technology to investigate and determination. The target is mainly focused on developing and investigating two important properties of cheese quality i.e. pasteurization and the amount of ingredient and uniform distribution.

Algorithm of initial image processing used to remove the extra cheese edges in a 3 stages process, inclduing color quantitiy, the locatoin of adding ingredients, and covering. Finally, distribution and the amount of each ingredient automatically calculated. Machine mavision has the possiblity of investigation of quaity level of cheese and shredding of cheese. Two kind of cheese have been investigated by meansof this ethod.

1)cheese with garlic and parsely

2) chesse including, pepper and parsley

In comparison to organoleptic methods, distribution and the amount of cotained materials was with accuarcy more than 88% and foir the secondcollections were more than 81% and 71%.

CONCLUSION

The main problem in image processing technique is cost problem. An image processing system still faces to many risky issues. Combination of algorithm of image processing of special hardware remarkably decreases required time. Image processing techniques will play important roles in determination of food stuffs quality.

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