1. Motivation

Machine vision technology based on artificial intelligence is promoting enterprises to realize intelligent manufacturing. At present, various degrees of LED lamp bead detection are carried out for 20*30mm defects through multi-angle light source technology, and there are certain degrees of defects between good LED lamp beads. How to design an effective algorithm for LED defect identification using multi-angle light images has become a key issue in the process of landing applications.

2. Tasks

Take the data identification test of the LED production group as a sample, make a model according to the sample provided as needed, and different LED packages provide defect types of defects.

3 Data Description

The multi-angle light imaging data uses LED methods including 22 low-angle lights, 1 emission light and 1 area light format. The category of defects identified by the user based on a given image, containing normal, glue defects, bubble defects, object defects, a total of 4 categories. In the file_data.xls, it contains the id, image file name and the category, for example,

11 000011 0

“11” is the sequence no in the xls file, “000011” is the image file name. “0” is the class label, it indicates the image file “000011.bmp” in imgs folder is normal or qualified product.

3639 003639 1

“3639” is the sequence no in the xls file, “003639” is the image file name. “1” is the class label, it indicates the image file “003639.bmp” in imgs folder belongs to the glue defects.

3896 003896 2

“3896” is the sequence no in the xls file, “003896” is the image file name. “2” is the class label, it indicates the image file “003896.bmp” in imgs folder belongs to the bubble defects.

And so on.

4. Experiments and Evaluation

You may randomly select 70% from each class for training, 15% from each class for validation, and 15% from each class for testing. The evaluation is used with the weighted accuracy, each class has equal weight. You may refer to the following article.

https://www.datascienceblog.net/post/machine-learning/performance-measures-multi-class-problems/

5. Submission

Please submit your entire scripts, the screenshots of your running experiments, your experimental results, and a summary for you to learn in this project.