

# UV Light Surface Defect Inspection

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## Client

From a humble beginning in 1998, our client has grown to become a leading global supplier of precision-engineered products using Metal Injection Molding as the core manufacturing technology. Today they have achieved a leadership position in the field of MIM, Providing precision-engineered products to customers in more than forty countries in the Americas, Europe, and Asia.

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## Problem Faced

- The client wanted to do the NDT for a part to find the surface defects on it. The component is electro-magnetized and then washed with the fluorescent water, and the defects are only visible in UV light.
- The customer was doing the quality check manually and wanted to automate the process where the operator would place the component and trigger the camera for acquiring the image. And then the image would be processed and the result would be displayed on the UI screen.

## Technology introduced by Qualitas Technologies

As this is a special case of analyzing the surface defects due to the visibility of defects only under UV light, we proposed to use a colour camera and a UV light for illumination. Once the images are acquired, we labelled and trained the images in a Deep Learning based image processing software. The trained features would be extracted and once the model was trained, the same would be deployed and would be tested in the run-time environment.

The AI-based solution development needed a lot of data or image set to train the model. The process also needed fine-tuning once the solution was deployed at customer end and accuracy was checked. As we could solve the complex surface defects using a rule-based approach due to its limitation, we moved towards AI to solve bigger and complex problems related to Quality Inspection in manufacturing industries.

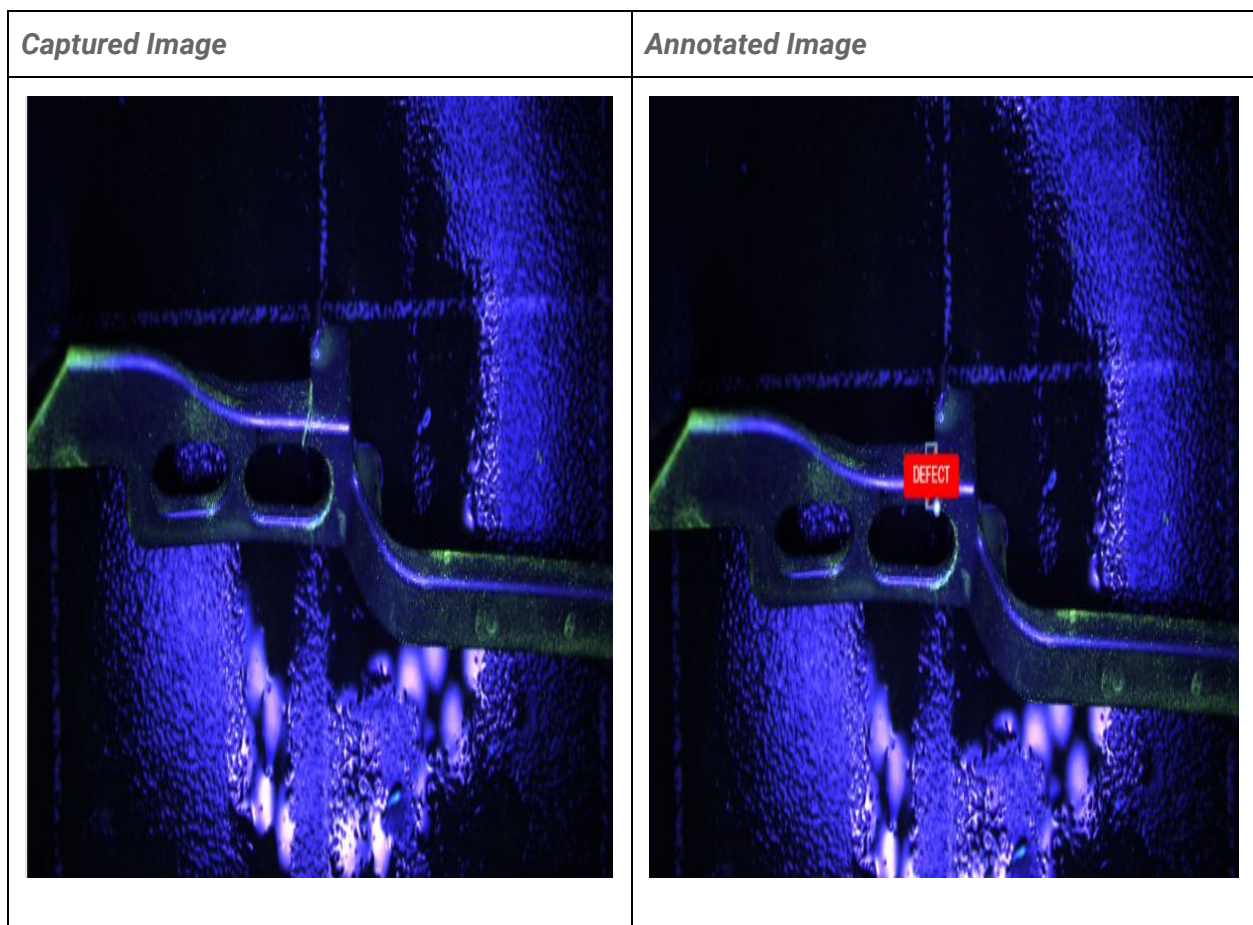


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## Solution

- Images were acquired using a colour camera and UV light in the factory condition.
- The defects were visible and the same set of images were trained in an AI-based image processing software for supervised learning using segmentation tools.
- The model was trained for all types of defects and accuracy was tested.

## Images



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## Results

The installed system works perfectly.

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53 Kempegowda Double Road, BEML Layout 5th Stage  
Rajarajeshwarinagar, Bangalore 560098, INDIA



<http://www.qualitastech.com>



+91 (80) 4709-1438

