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AUDIT

COMPUTER VISION TECHNOLOGY DESIGNED FOR HIGH-LEVEL UNDERSTANDING OF IMAGES OR VIDEO FRAMES, FOR QUICK, AUTOMATED AND RECURRENT AUDITING TASKS, POWERED BY ARTIFICIAL INTELLIGENCE AND BUSINESS LOGIC

Motivation

Auditing in retail or warehousing is still a very time-consuming and manual process, being very prone to human error, while performed by visual inspection and mapping with a plan. Planning layouts are crucial for space optimization and lean operation. The proof of compliance with store and shelf layouts is a recurrent activity. Wrong product placement or out-of-stock scenarios induce revenue shrinking, contractual penalties with suppliers and poor consumer satisfaction.

Quality control in manufacturing is often performed by manual inspection to ensure that parts are assembled short of imperfections. Quality checks are also part of the supply chain and logistics, including the detection of counterfeit products which is a concern increasingly prominent for global brands.

Solution

Computer vision and cutting-edge machine learning are used to automate visual inspection, leveraging: object recognition based on image features or context; image labeling; sensor fusion for depth detection and panorama stitching; text recognition and barcode code scanning.

For the food retail market, we created a semi-automatic buggy to take high quality images of the supermarket shelves in fast motion, controlling reflections and blur. Shelf layouts are automatically compared with actual in-store products, enabling the detection of wrong placements, out-of-stocks and incorrect prices. User interfaces include highly visual information of issues and priorization of corrections, with fully integration with information systems by web services.

For counterfeit detection, we developed a simple mobile application that guides the user to take pictures of relevant regions of products, extracts information from the acquired data and validates it with databases of genuine products.

Benefit

More than 200 audits in retail aisles have significantly decreased wrong product placement and out-of-stock, while reducing costs of control. Pilots in the biggest retailers in Portugal and Austria have shown a 90% reduction of monitoring time when compared with human auditing.

The counterfeit detector has shown high reliability regarding information extracted from smartphone pictures, of power tools, their packages and nameplates.

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