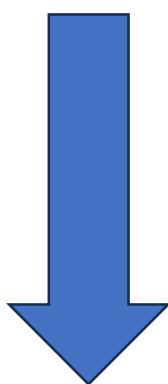


Robot assisted system to automate creation of image datasets for industrial image processing

My current project at FAPS Nürnberg focuses on developing a computer vision based, robot assisted pipeline for automated dataset generation in industrial environments. A 6 axis UR robot equipped with a calibrated 2D camera captures electrical components from multiple predefined angles under controlled conditions. The system performs automatic background subtraction, generates 2D and 3D bounding boxes, and leverages intrinsic and hand–eye calibration to ensure spatial accuracy. This automated dataset creation approach minimizes manual annotation while ensuring high quality, consistent data crucial for training deep learning models. The methods potentially have broader applications in autonomous systems, where robust visual perception and precise spatial understanding are critical including for autonomous vehicles navigating dynamic environments.

I have attached some pictures of my project below



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