Car Scratch Detection Using Detectron2

Abstract:

In the age of automation, the ability to detect defects, such as scratches and damages on car, becomes an invaluable asset for quality assurance in the automotive industry. This seminar delves deep into harnessing the power of Detectron2, a state-of-the-art object detection platform developed by Facebook AI Research, to create a robust system for car scratch and damage detection.

Traditionally, manual inspections have been the norm for identifying imperfections on car surfaces. However, this approach is not only time-consuming but also prone to human errors. Enter Detectron2: designed for versatility and equipped with cutting-edge algorithms like Mask R-CNN and RetinaNet. By training this tool on a curated dataset of car images, we aim to achieve precise localization and categorization of scratches, damages, and even car parts.

Our methodology is encapsulated within a Python-based framework, which, upon receiving an image of a car, processes it through trained models to identify and highlight detected imperfections. Preliminary evaluations showcase a high degree of accuracy and efficiency, making it a potential game-changer for automotive inspections.

The seminar will offer a hands-on demonstration, detailing the setup, training, and inference processes using Detectron2. Additionally, insights into challenges faced, solutions devised, and potential future enhancements will be discussed.

Attendees will not only gain an understanding of Detectron2's capabilities but also witness its practical application in solving a real-world challenge in the automotive domain.