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Customer Object Interaction Analytics in Retail Using YOLOv5 Object Detection

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KEYWORDS	ABSTRACT
Customer Behaviour Analysis, Human Object Interaction (HOI), Retail Analytic, Computer Vision, YOLOv5	Customer Interaction Analytics is an approach to comprehend customer interaction and behaviour providing crucial information to retailers for an in-depth understanding of customer behaviour. In the long run, the sales and customer satisfaction levels are directly correlated to their interaction with the shelf and the proper catalogue of products available on the shelf. A case study was devised to observe customer behaviour by developing a framework for Customer Object interaction detection analysis with the items available on the aisle. The study focused on a particular shelf in the brick-and-mortar retail scenario and visualised the interaction analytics by heatmap. A computationally inexpensive system for object detection known as the YOLOv5 model was integrated for retailers to perceive in-store customer interaction. The proposed data was retrieved from the MERL shopping dataset since it satisfies all the design criteria. It comprises 106 videos each 2 minutes duration recorded from an overhead camera. The training data was annotated manually into three classes i.e. Interacting (i), Not Interacting (ni) and holding product (hp), which yielded 99.9%, 73% and 91% accuracy respectively in the test dataset.
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