

## Special Issue on Scene Understanding and Product Recognition in Retail Environments

# CALL FOR PAPERS

Retail is currently one of the top ten industries targeted by machine learning and artificial intelligence technologies. As a result, a new field called “Retail Intelligence” has emerged, both commercially and scientifically, which focuses on the creation and management of knowledge by analyzing all kinds of information generated on the retail floor. This information in its raw form is primarily comprised of visual data; thus computer vision stands out as the essential asset of artificial intelligence in retail.

Applications of retail scene understanding are quite wide, ranging from assistance to visually impaired shoppers and automated checkout systems to shelf compliance monitoring and consumer behavior analysis. Yet, the challenges of parsing a complex retail scene can be substantially different and exacerbated in contrast to a typical vision problem. A single snapshot of a supermarket interior can contain up to hundreds of cooccurring target object instances from a large pool of tens of thousands of fine-grained classes (product brands with minute differences in packaging), not to mention very high levels of clutter. The dynamics of a typical retail scene are also very involved; products and shelves are constantly interacted and altered by consumers, store, and merchandise people. Despite this sheer complexity, available datasets to train automated systems aimed at inferring retail scenes are very limited and sparse in contrast to typical needs of today’s data-savvy methods like deep learning. On the other hand, performance requirements in terms of accuracy and speed are usually high.

Given these challenges, this special issue aims at capturing recent developments in computer vision, machine learning, and artificial intelligence, with a focus on understanding retail scenes with all the details and dynamics they entail, including inferring the identities and arrangements of products on the shelves and displays, reasoning for other objects present in the scene and their contextual relations, capturing the occurrence and locations of out-of-stocks, and tracking and identifying the interactions of consumers with products and each other.

For this special issue, authors are invited to submit original research papers and high-quality review articles.

Potential topics include but are not limited to the following:

- ▶ Product detection, localization, and recognition
- ▶ Semantic segmentation of retail scenes
- ▶ Logo catching
- ▶ Small sample deep learning for fine-grained classification
- ▶ Shopper tracking and action recognition
- ▶ Models for retail scene priors and context aware recognition
- ▶ Mobile recognition and shopper assistance
- ▶ Mobile 3D scanning and augmented reality for retail
- ▶ Cross-platform data augmentation and new datasets for retail scene understanding

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/am/sup/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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