Xiaoyan Dai

KYOCERA Corporation, Japan

Leftover Food Recognition Using Deep Learning

Recently, food recognition technology is expected to be more widely used, such as in real-time telemedicine dietary monitoring and post-checkout systems used in canteens. For these purposes, perception recognition of dietary intake becomes more fundamental and important than meal recognition itself. Recent research has shown that computer vision technology can help automatically recognize diverse foods and estimate the amount of food intake. However, training models requires a large amount of data in order to recognize various leftovers, and improving performance while reducing data collection and labelling costs is quite a big challenge. This paper proposes a deep-learning-based food and leftover quantity recognition system with designed system architecture, data augmentation approach and semi-supervised learning approach, which achieves high performance even with a small amount of labeled data. The recognition performance of dish, food and leftover classes with our own evaluate data sets is higher than 0.97. The proposed system can be applied to canteen self-checkout or calorie monitoring.

Biography

Xiaoyan Dai, Received her Ph.D. in image processing from Muroran Institute of Technology in Japan in 2004, specializing in computer vision and machine learning. Since then, she has focused on image processing and document processing at Canon Inc. In 2019, she joined the Research Center of Kyocera Corporation as an Expert. Her current interests include Artificial Intelligence, Machine Learning, Deep Learning, Computer Vision, Pattern Recognition, Anomaly Detection, Data Miningand Natural Language Processing. She serves as an organizing committee member for multiple international conferences. She is also a speaker at multiple international conferences.

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