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# Exploitation of prototyping network in shelf product recognition

This paper uses a prototyping network to address the problem of recognizing products on store shelves. The problem of identifying store products is similar to the problem of facial recognition. The number of facings is practically unlimited, and new products are introduced every week, current labels are changed, and new product variants are added. Collecting appropriate training patterns is very time-consuming, and with such high product variability, it would require continuous collection of vast amounts of data and retraining classification models. To effectively solve this problem, we should try to reduce it to a few-shot and zero-shot learning problem in classification applications where the available data representing each class is limited. Prototype networks have been gaining popularity recently, partly due to their effectiveness in solving this class of problems.
This research presents the concept of utilizing a prototype network for recognizing store products, where training and test sets consist of real photos of store products. Prototypes are determined in a latent space, and classification is based on the distance to the prototypes. The results are compared for three distances: cosine similarity, squared Euclidean distance and Chebyshev distance.

keywords: CNN, prototype network, few-shot learning, zero-shot learning

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