Adaptive Scenario Discovery for Crowd Counting

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The Problem

Now the architecture of the crowd counting is difficult to represent highly variable crowd images but the images under similar scenario seem to have the same prediction pattern.

we have presented a novel architecture for high-density population counting, which focuses on the implicit discovery and dynamic modeling of scenarios.

Proposed Framework

The backbone is the VGG-16 model pre-trained from the ImageNet dataset and fine-tuned with the crowd images;

2. The dense branch is designed to model the high congested scenario with a dense crowd, and sparse branch is for the sparse scenario;

3. The third pathways will output w that to adaptively recalibrate the weight of the dense and sparse pathways, therefore we normalize it into the interval of [0,1).

Key Related Work


Conclusions

1. We presented a novel architecture for high-density population counting;
2. The implicit discovery and dynamic modeling of scenarios are effective;
3. Our proposed framework achieves state-of-the-art performance.

The formula of adaptively recalibrate the weight:

\[ w = \frac{\arctan(\text{sigmoid}(w)) \cdot \frac{2}{\pi}}{2} \]

During training, we employ the stochastic gradient descent (SGD).