

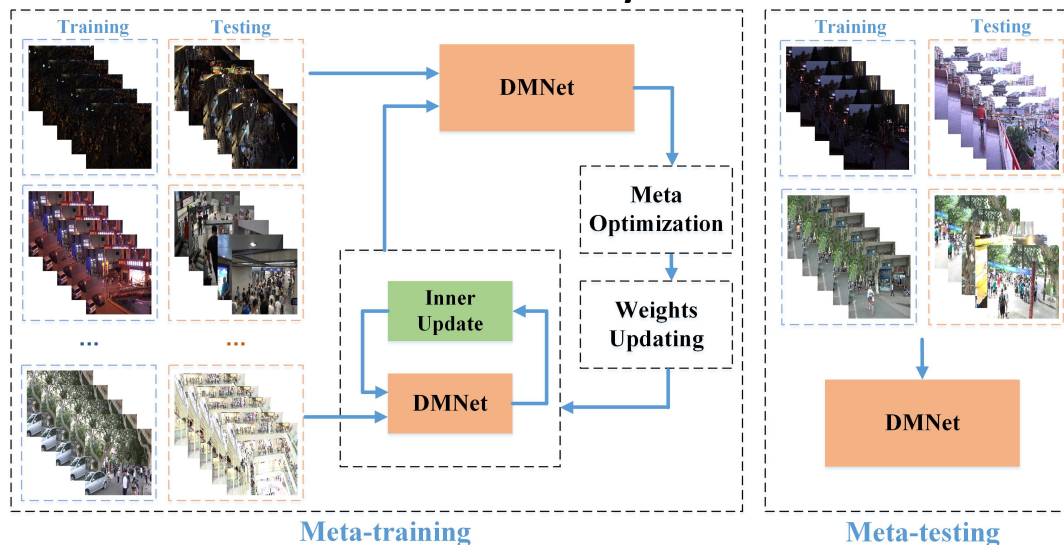
# Scene-adaptive Crowd Counting Method Based on Meta Learning with Dual-input Network DMNet

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Frontiers of Computer Science, DOI: [10.1007/s11704-021-1207-x](https://doi.org/10.1007/s11704-021-1207-x)

# Problems & Ideas

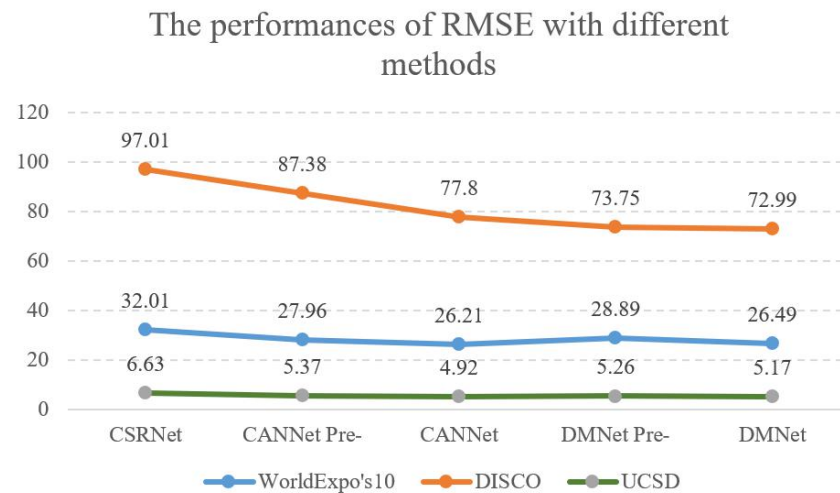
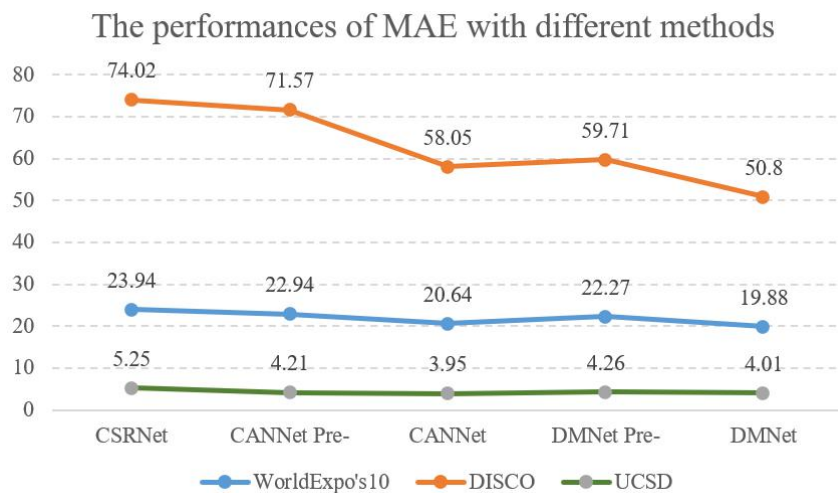
- Problems of conventional stereo matching approaches:
  - Existing methods fails to accurately count the crowd in real-world scenes because of the limitation of model's generalization capability.
  - The collection and labeling of training data of crowd counting is expensive and unavailable.
- Ideas: The proposed scene-adaptive crowd counting method based on learning-to-learn and few-shot learning is able to adapt different scenes which only contain a few labeled images.



The scene-adaptive crowd counting method with meta-learning. The meta-training step aims to train a pre-trained model. The meta-testing step aims to fine-tune the pre-trained model for new scenes.

# Main Contributions

- Contributions:
  - With the idea of "learning-to-learn", the proposed scene-adaptive crowd counting method can deal with different complex scenes;
  - To estimate the density map of the crowd and count the number of people, the DMNet is proposed. The network is designed as the backbone in the scene-adaptive crowd counting method;
  - Considering the influence of the illumination in complex scenes, the Element-wise Fusion module is proposed.



The performances of different models on three benchmarks, i.e., WorldExpo's10, DISCO, and UCSD. Left: the value of MAE; Right: the value of RMSE.