Overview

Problem:
- Training of object detectors requires large amounts of annotated data.
- Manual annotation of bounding boxes is very time-consuming.

Contributions:
- Automated generation approach exploiting geometry and semantic information.
- Offer insights on how training data should be generated in the future.
- Extensive evaluation of state-of-the-art object detectors.

Synthetic Set Generation

Synthesizing Training Data for Object Detection in Indoor Scenes
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Experiments and Results

1) Real to Real: Trained only on the real manually annotated data.
2) Synthetic to Real: Object detectors are trained on various synthetic sets to determine the effect of positioning and scaling.
3) Synthetic + Real to Real: Combination of synthetic and varying proportions of real data.
4) Synthetic to Synthetic: Synthetic data for training and testing to observe the reduction of over-fitting.

Conclusions

• Object detectors can be trained with significantly less annotated data using our proposed synthetic data augmentation.
• When the object placements are based on semantic and geometric information the synthetic training data are more effective.

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References