SDF-SRN: Learning Signed Distance 3D Object Reconstruction from Static Images

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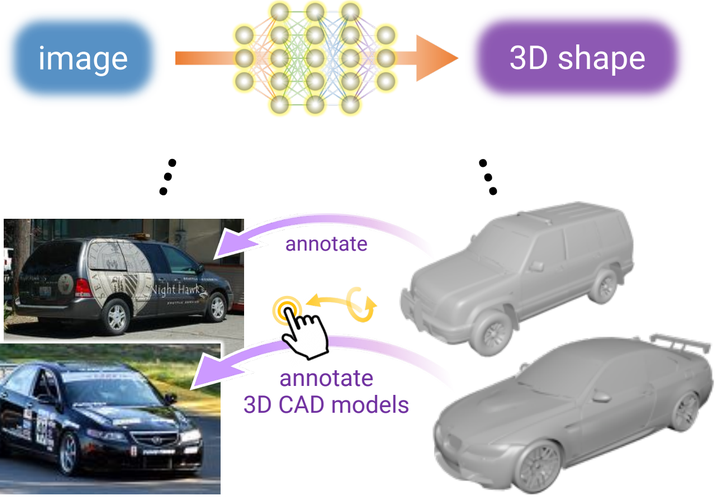
NEURAL INFORMATION PROCESSING SYSTEMS

Overview

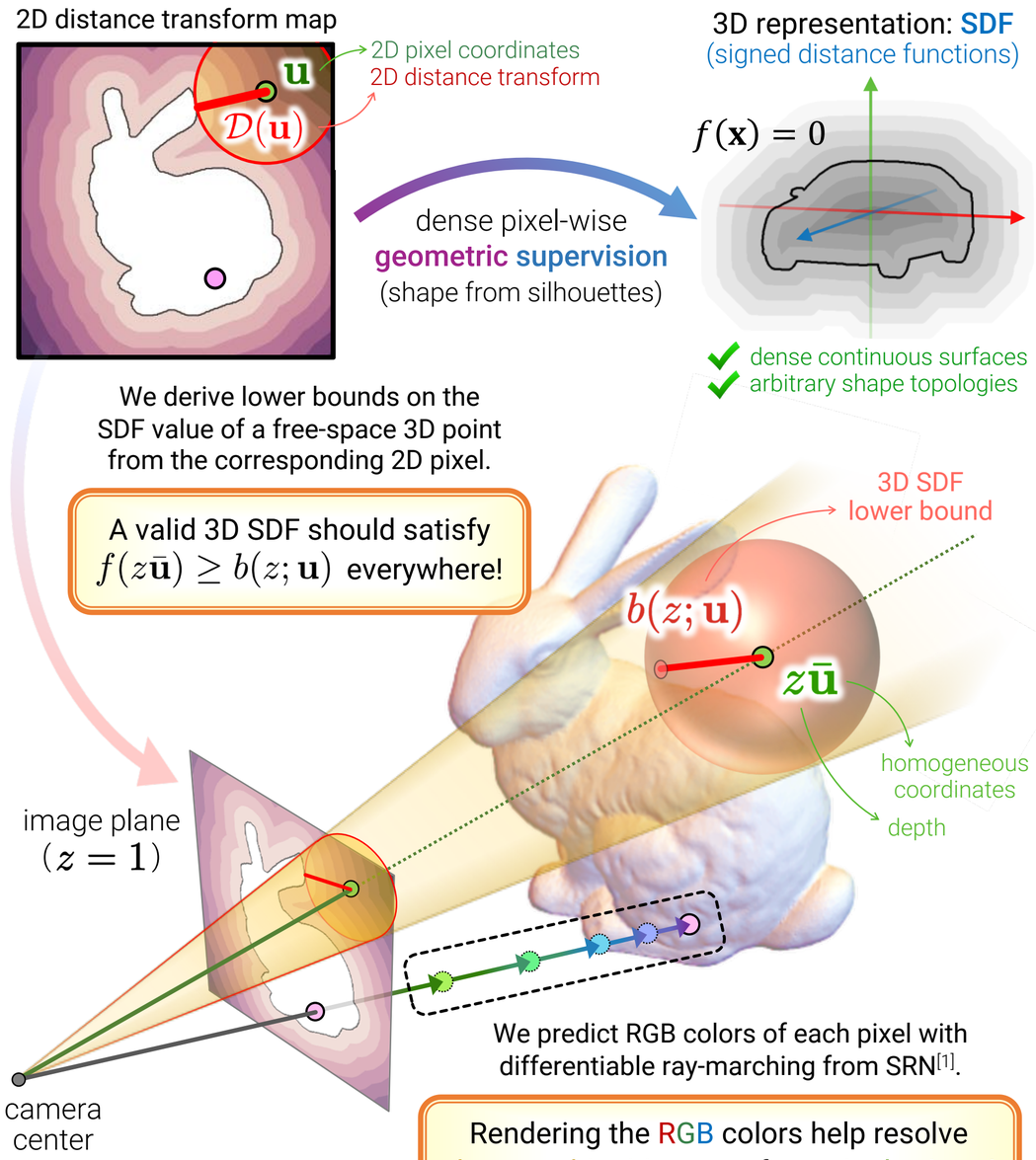
Question: What data is needed for neural networks to learn 3D object reconstruction?



3D annotation is **expensive** and **unscalable**!
We might not even know what the 3D ground truth is!

Annotating 2D silhouettes is more **scalable**!
Single images + silhouettes as more practical supervision!

Approach

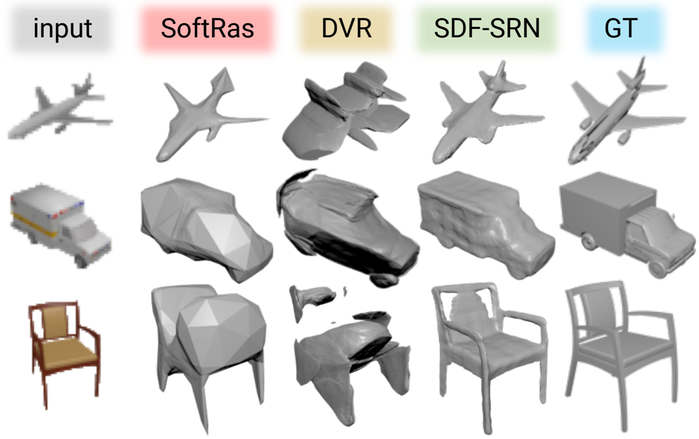


[1] Sitzmann et al. "Scene Representation Networks: Continuous 3D-Structure-Aware Neural Scene Representations." NeurIPS 2019.

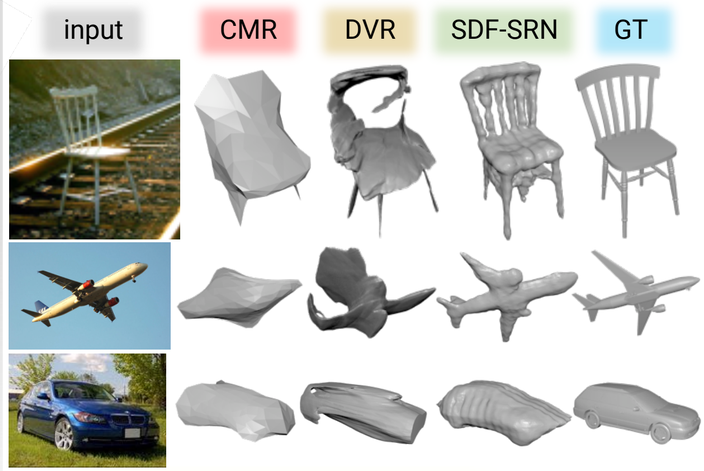
Results

⚠ We consider **single-view training**!
(much challenging than multi-view supervision!)

ShapeNet (synthetic)



PASCAL3D+ (real-world)



Check out our project page for more details and discussions!

Code & models also available!!!
https://chenhsuanlin.bitbucket.io/signed-distance-SRN