Multi-view 3D Models from Single Images with a Convolutional Network

Maxim Tatarchenko, Alexey Dosovitskiy and Thomas Brox

University of Freiburg
ECCV 2016

M. Tatarchenko. A. Dosovitskiy, T. Brox “Multi-view 3D Models From Single Images with a ConvNet”
Humans have prior knowledge about 3D

Side view?

M. Tatarchenko, A. Dosovitskiy, T. Brox “Multi-view 3D Models From Single Images with a ConvNet”
CNN for novel view prediction

Trained on renderings of synthetic 3D models

M. Tatarchenko, A. Dosovitskiy, T. Brox “Multi-view 3D Models From Single Images with a ConvNet”
Performance on synthetic data

Input images

M. Tatarchenko, A. Dosovitskiy, T. Brox “Multi-view 3D Models From Single Images with a ConvNet”
Trained on synthetic – works on natural

M. Tatarchenko, A.Dosovitskiy, T. Brox “Multi-view 3D Models From Single Images with a ConvNet”
Network learns consistent 3D representation

Raw point cloud

Optimized mesh

M. Tatarchenko, A. Dosovitskiy, T. Brox “Multi-view 3D Models From Single Images with a ConvNet”
Informative inputs lead to better predictions
Internal representation is invariant

pairwise distances

M. Tatarchenko, A. Dosovitskiy, T. Brox “Multi-view 3D Models From Single Images with a ConvNet”
Thank you!

Maxim Tatarchenko
Alexey Dosovitskiy
Thomas Brox

Poster: S-3B-09
15:00 – 16:30

M. Tatarchenko, A. Dosovitskiy, T. Brox “Multi-view 3D Models From Single Images with a ConvNet”