

Forschungspraxis, Master's Thesis

# Prior-based 3D Reconstruction

The generation of a Digital Twin through 3D reconstruction is and will be a major topic for AR applications, 6G communication, and robotics.

Following [1], this thesis also follows the approach of using prior CAD database information for the 3D reconstruction. This thesis may use self-attention-based networks, confidence-part-based shape retrieval [2], and generative networks to partially reconstruct/ partially retrieve objects, thus achieving higher accuracy.

## References

[1] Bokhovkin, Alexey and Angela Dai. "Neural Part Priors: Learning to Optimize Part-Based Object Completion in RGB-D Scans." ArXiv abs/2203.09375 (2022): n. pag. h  
<https://arxiv.org/abs/2203.09375>

[2] Beyer, Tim and Angela Dai. "Weakly-Supervised End-to-End CAD Retrieval to Scan Objects." ArXiv abs/2203.12873 (2022): n. pag. <https://arxiv.org/abs/2203.12873>

[3] Tang, Jiaxiang, Xiaokang Chen, Jingbo Wang and Gang Zeng. "Point Scene Understanding via Disentangled Instance Mesh Reconstruction." ArXiv abs/2203.16832 (2022): n. pag.  
<https://arxiv.org/abs/2203.16832>

## Prerequisites

- Experience with Git
- Python (Pytorch)
- Knowledge in working with 3D Point Clouds and Meshes (preferable)

## Contact

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## Advisors

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