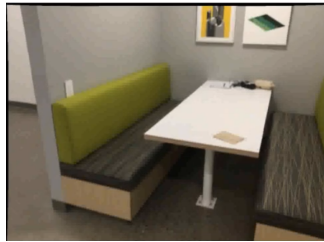
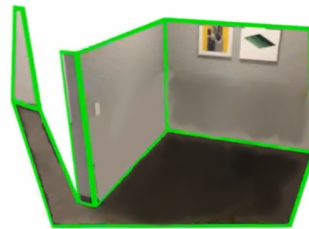


# 3D Room Layout Inpainting

Bachelor Thesis / Seminar Project / Master Thesis



Input Image



3D Room Layout Inpainting

**keywords:** 3D Vision, Projective Geometry, Room Layout, Inpainting

## Objective:

State-of-the-art methods in 3D Room Layout Estimation are able to recover precise locations of room corners and room edges from a single image [1]. These recent advances open up new possibilities in many domains, *e.g.* Augmented Reality and Robotics. One possible use case for such methods is a challenging task of 3D Room Layout Inpainting. Given a single image of room environment, we would like to create a realistic 3D room layout rendering, removing objects in the foreground, *e.g.* furniture, and inpainting these regions in 3D to visually complement textures of non-occluded parts of layout components—walls, floors, ceilings. One obvious example for future application is interior design with augmented reality. Hence, the goal of this project is adaptation and evaluation of existing traditional and deep learning methods for the domain of 3D Room Layout Inpainting.

[1] S. Stekovic, F. Fraundorfer, and V. Lepetit, “General 3D Room Layout from a Single View by Render-and-Compare,” *arXiv preprint arXiv:2001.02149*, 2020.

## Objective:

- Learn projective geometry;
- Familiarize yourself with current state-of-the-art methods in room layout estimation and image inpainting;
- Actively participate in development, implementation and evaluation of a novel method for 3D Room Layout Inpainting;

## Qualifications/Expectations:

- Interest in 3D Vision, Augmented Reality, Machine Learning;
- Interest in teamwork with your advisor;
- Regular meetings/discussions;

**Note:** The exact goals for the project can be adjusted based on the expected workload of the project oriented course/thesis.

## Contact ICG:

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