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3D Modelling of Interior Spaces: Learning the Language of Indoor Architecture

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Abstract. 3D models of indoor environments are important in many applications, but they usually exist only for newly constructed buildings. Automated approaches to modelling indoor environments from imagery and/or point clouds can make the process easier, faster and cheaper. We present an approach to 3D indoor modelling based on a shape grammar. We demonstrate that interior spaces can be modelled by iteratively placing, connecting and merging cuboid shapes. We also show that the parameters and sequence of grammar rules can be learned automatically from a point cloud. Experiments with simulated and real point clouds show promising results, and indicate the potential of the method in 3D modelling of large indoor environments.

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