Abstract

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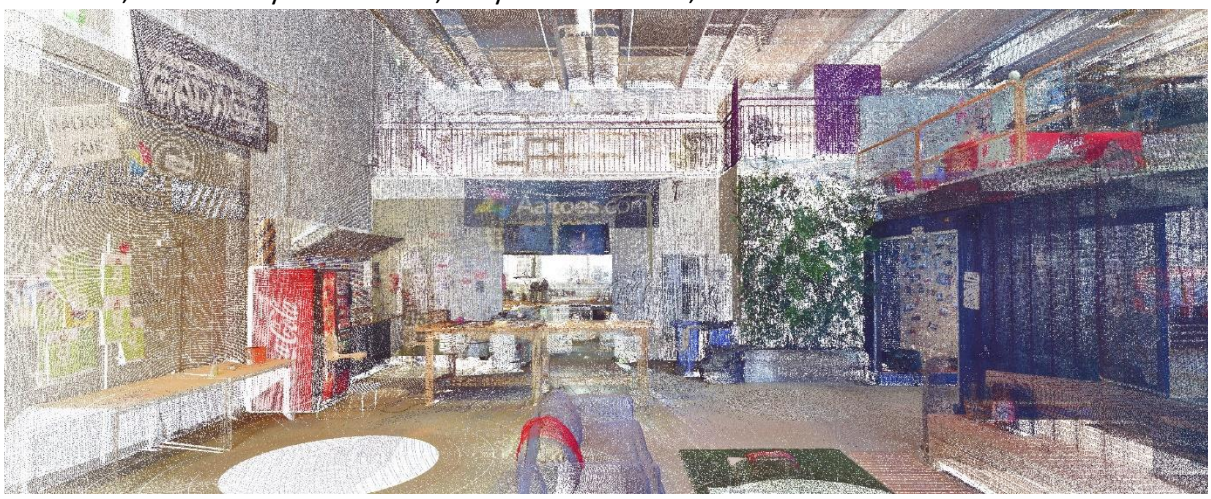
I will give an overview about the book chapter: “Indoor 3D: overview on scanning and reconstruction methods”, authored by Ville Lehtola, Shayan Nikoohemat, and Andreas Nüchter.



This chapter covers the essentials regarding indoor 3D data, from scanning to reconstruction. It is aimed for education and professionals. The order of presentation is background, history in measurement method development, sensors, sensor systems, positioning algorithms, reconstruction, and applications. The authors' backgrounds are in indoor 3D, mobile laser scanning, indoor reconstruction, and robotics. In order to maintain a coherence in the text and provide some useful tools for the reader, we have selected to focus solely on the ICP version of simultaneous localization and mapping (SLAM). Regardless, this should give a solid base for the reader to understand other (e.g. probabilistic) indoor SLAM methods as well. Reconstruction algorithms (starting from room segmentation and opening detection) are discussed with the help of abundant figures. At the very end, we discuss on future trends with a connection to the current applications and propose some exercise questions for students.

This material will soon be out as a book chapter, published by Springer and co-edited by Martin Werner.