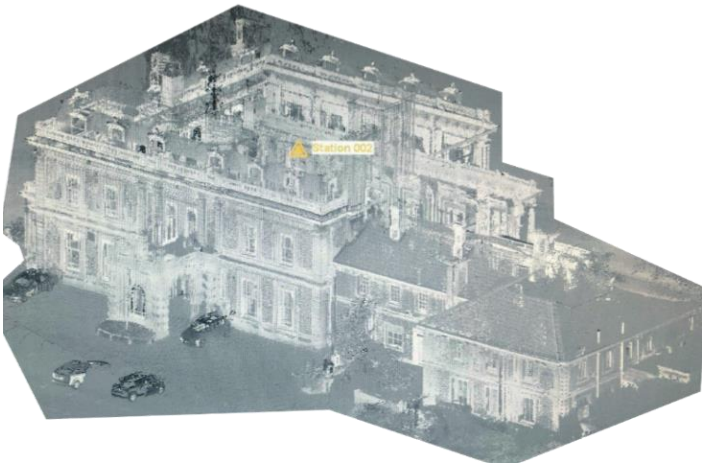
Laser Scanners as Constructive Tools of Digital-Twins

Zaid O. Saeed, School of Design and the Built Environment, Perth WA, Australia

Abstract

The urgent need to improve performance in the construction industry has led to the adoption of many innovative technologies. 3D laser scanners are amongst the leading technologies being used to capture and process assets or construction project data for use in various applications. Due to its nascent nature, many questions are still unanswered about 3D laser scanning, which in turn contribute to the slow adaptation of the technology. Some of these include the role of 3D laser scanners in capturing and processing raw construction project data. How accurate are the 3D laser scanner or point cloud data? How does laser scanning fit with other wider emerging technologies such as building information modeling (BIM)? This study adopts a proof-of-concept approach, which in addition to answering the aforementioned questions, illustrates the application of the technology in practice. The study finds that the quality of the data, commonly referred to as point cloud data, is still a major issue as it depends on the distance between the target object and 3D laser scanner's station. Additionally, the quality of the data is still very dependent on data file sizes and the computational power of the processing machine. Lastly, the connection between laser scanning and BIM approaches is still weak as what can be done with a point cloud data model in a BIM environment is still very limited. The aforementioned findings reinforce existing views on the use of 3D laser scanners in capturing and processing construction project data.

Image



Recent Publications

1. Almukhtar, A., Saeed, Z.O., Abanda, H. and Tah, J.H., 2021. Reality capture of buildings using 3D laser scanners. *CivilEng*, *2*(1), pp.214-235.
2. Saeed, Z.O., Almukhtar, A. and Salih, K., 2021, March. Construction Beyond War: Assessing Time and Cost of Prefabrication in Rebuilding Post-Disaster Cities. In *IOP Conference Series: Materials Science and Engineering* (Vol. 1090, No. 1, p. 012057). IOP Publishing.
3. Salih, K., Ledesma, G. and Saeed, Z.O., 2021, March. Simulation of Energy Efficiency Measures for the Residential Building Stock: A Case Study in the Semi-Arid Region. In *IOP Conference Series: Materials Science and Engineering* (Vol. 1090, No. 1, p. 012018). IOP Publishing.

Biography

PhD Researcher at the school of Design and the Built Environment, Curtin University. Zaid is an architect, academic and researcher. He has a MSc in Construction Project Management from Oxford Brookes University, where his Dissertation "The Revival of Mosul" achieved a Distinction classification and a BSc in Architecture. Zaid's research focuses on integrating advanced technology with the topics of construction, smart architecture and future cities. His ambition for a healthier, smarter and digitalized AEC is reflected on his research and publications. He is interested in the scope of future cities, digital-twining, BIM dimensions, architecture of place, and identity in cities.

Email:
zaidosama94cpm@gmail.com