Automation in Safety Planning in Construction: Insights from a Literature Review

Hao Chen,[1] and Isabelle Chan[2]

[1]Ph.D Student, Dept. of Real Estate and Construction, Univ. of Hong Kong, Pokfulam Road, Hong Kong, PR China. E-mail: haoc@connect.hku.hk
[2]Assistant Professor, Dept. of Real Estate and Construction, Univ. of Hong Kong, Pokfulam Road, Hong Kong, PR China. E-mail: iyschan@hku.hk

ABSTRACT

Construction has long been notorious for its high accident rates. Topics related to construction safety planning have thus been widely studied worldwide. With the rapid development of various tools and technology, there have been increasing studies investigating automation in safety planning in construction for around three decades. It is interesting that researchers tend to approach construction safety planning with a slightly different focus using different methods and tools. This study aims to review research on automation in safety planning in construction from 2002 to 2021. It covers the topics of automated safety planning for permanent (88%) and temporary structures (12%), using fully (56%) and semi- (44%) automatic approaches. The results not only highlight the need for further research in the areas of automatic temporary structure planning in construction but also reveal major challenges facing automated safety planning, including the lack of construction schedule for integrating work sequence; the labor-intensive, manual rule interpretation process; requirements of explicit model details; and lack of emphases on temporary work safety. In the future, more studies shall be conducted to investigate the application of artificial intelligence in construction safety planning.