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Architectural Computational Optimisation in Designing Acoustics and Seating Arrangements

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Abstract

In architectural practice, it is challenging for designers to predict future spatial performance based on limited information in the early stages of design. To address this design problem, architectural design optimisation can assist the designer by projecting building performance utilising single or multiple criteria over different architectural geometric analyses in the design process. The primary purpose of this paper is to describe how to design a computational optimisation program that can automatically generate concept design solutions, and determine its impact on the design outcome. In order to investigate the application of computational optimisation in architecture, this study involved analysis of a small-scale community performance facility as the proposed building type in the design exploration. Through this study, a deeper understanding of optimisation processes is intended to contribute to advancing architectural practice through computational generative design.

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