

# EXPLORING INTERLOCKING ASSEMBLIES IN ARCHITECTURAL DESIGN

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## ABSTRACT

The utilization of flat structures based on interlocking assemblies has been a recurring topic in academia, showcasing numerous applications in mechanical engineering and material research. However, at the architectural scale, it remains a field with limited practical application, often due to the mechanical complexity of the assemblies, or a lack of design strategies. One primary advantage of this structural typology is the practicality of constructing structures with identical modular blocks, solely under compression. Historical examples of interlocked flat vaults, crafted by masters of stereotomy, demonstrated their practicality but also their complex elaboration. Digital fabrication methods contribute significantly to the feasibility of this practice, particularly because of the manufacturing precision. This presentation introduces preliminary studies of applications and various approaches to designing discrete interlocked assemblies for their application in load-bearing structures.

## BACKGROUND

Kevin is an architect, designer, and research associate at the Chair of Structures and Structural Design within the Faculty of Architecture. Since 2019, he has been pursuing his PhD at RWTH-Aachen, focusing on the utilization of naturally grown timber in load-bearing structures. Prior to this, Kevin served as a visiting scholar at the Building Technology Lab at MIT and worked as a consultant designer specializing in sculpture design and fabrication. His research interests span a broad spectrum, including design automation, analysis of singular structures like topological interlocking assemblies, shell structures, folding structures, and digital manufacturing techniques.