



## Complex discrete assemblies

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### ABSTRACT

Robotic and robot-assisted fabrication opens up new avenues for architectural design and construction. Being able to materialize design directly from a digital blueprint creates new rationale for customized and geometrically complex designs. We explore new constructive systems and design workflows that arise from this potential.

For example, just-in-time fabrication of parts combined with robotic assembly allows to handle large amounts of unique elements or placement positions which in conventional construction would likely cause a considerable logistic bottleneck. This advantage not only caters to free-form architectures, which naturally tend to consist of non-regular geometries and non-repetitive parts but more importantly facilitates designs differentiated in terms of e.g. material or geometry in lieu of blanket solutions.

Combined with computational design methods, digital fabrication allows to approach the resulting – or intrinsic, uncovered – complexity, provided the critical aspects are taken into account early on. Geometry needs to be negotiated on par with other design drivers such as structural behaviour or fabrication-related constraints.

The presentation will discuss these challenges based on recent research and full-scale construction projects of our research group.

