

PANELING ARCHITECTURAL FREEFORM SURFACES

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Advances in construction and material technology have enabled the use of freeform surfaces as prominent and striking elements in contemporary architecture. To build an architectural freeform surface, it is usually segmented into many small pieces, called panels, which are then separately mounted onto a supporting structure. This is referred to as rationalization or *paneling* of a freeform surface. The layout of these panels underlies numerous objectives and constraints and forms the core geometric problem to render the construction of general freeform surfaces feasible and affordable. Objectives include the visual quality of the seam lines, the exploitation of panel shape repetitions, and a faithful approximation of the original surface designed by the architect. Constraints are directly imposed by material properties and fabrication processes. Due to its challenging complexity the paneling problem cannot be solved by a brute force optimization approach. The key is to find smart approximations, exploit interactive initialization and geometric insights to build a general paneling pipeline. We are convinced that such a pipeline will be an indispensable tool for the freeform architecture of tomorrow.