

Procedural Modeling of Suspension Bridges

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In this paper we introduce a method for designing a class of engineering structures, namely suspension bridges. These bridges are ubiquitous in the industrialized countries, often appearing in known city landscapes, yet they are complex enough that hand-based modeling is tedious and time consuming. We present a method that finds the right proportions for such a structure through an optimization method that tries to distribute the tower positions while maintaining cable width to be a finite number. By simultaneously optimizing the span and sag of the cables of a bridge, we optimize the geometry and soundness of

the structure. We present the details of our technique together with examples illustrating its use, including comparisons with real structures.