Large-Scale Mesh Curving for the 5th High-Lift Prediction Workshop

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Abstract

To take advantage of unstructured high-order methods, practitioners require a high-order curved mesh that discretizes the computational domain. To address this need, we have developed a curving technique to generate geometrically accurate distributed meshes composed of optimal-quality elements. Remarkably, our curving method has allowed us to provide meshes for the challenging geometries of the High-Lift Prediction Workshop. Our meshes have been tested and shown to be suitable for simulation purposes, yielding accurate solutions consistent with wind tunnel data.

In this work, we will describe the development of our curving method and its unique features, such as using floating meshes to approximate a virtual model and fully converge the optimization process to obtain optimal-quality curved meshes. We will also detail the challenges of generating meshes for the 5th High-Lift Prediction Workshop and our conclusions on large-scale mesh curving for complex geometries.

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