

E2: Reverse optimization of an airfoil

(翼型几何外形的反优化)

1. Tasks

Optimize the given baseline airfoil, aiming to obtain the geometry similar to the target airfoil. 对基准翼型的几何外形进行优化，以获得最接近于目标翼型外形的翼型。

2. Requirements:

- a) Starting with the given baseline airfoil, try to find a geometry close to the target airfoil by optimization (从基准翼型出发，通过优化手段，获得接近于目标翼型的几何构型).
- b) Write the mathematical model of the optimization problem. (写出优化问题的数学模型)
- c) Solve the optimization problem at least by one gradient-based optimization method and one intelligent optimization algorithm. (至少采用一种基于梯度的优化算法和一种智能优化算法求解优化问题)
- d) Make results analyses and compare the optimization algorithms used. (进行结果分析和算法对比)

3. Evaluation:

(1) Off-line evaluating, 70%. (线下评估)

- 1) 优化过程演示
- 2) 老师提问及回答

(2) Report evaluating, 30%. (报告评估)

- 1) 优化问题的解释和数学模型;
- 2) 优化算法的选择原因及参数调整;
- 3) 优化历程和最优解的分析;
- 4) 两种优化算法获得结果的分析。