的表示.数值示例验证了在本文构架基础上所研发软件的实用性.将本文的工作与 SiPESC 中代理模型功能相结合,极大地发挥了 SiPESC 中代理模型的功能特点,增强了代理模型使用的独立性和灵活性,为模型分析、优化、快速可视化提供了非常实用的工具.

此外,代理模型结果的 MathML 表示可以直接导出到 Word、Latex 等支持 MathML 表示公式的文档中,以文档的形式显示和传播.

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Framework for expression of surrogate model using popular scripting languages based on platform SiPESC

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Abstract: Based on the service-oriented open software platform SiPESC and popular mathematical notations, structure and content descripting markup language MathML, a general framework for expressing result of surrogate model in popular scripting languages is generated. The core idea of the framework is that MathML elements are used to express the result of surrogate model, such as RBF, RSM, Kriging, so that the result can be saved as text. Besides, the abstract factory design patterns are adopted to manage the extensions for the expression tool of scripting languages, such as JavaScript, Python, Matlab, which can flexibly convert the MathML data into scripting languages. The technology of MathML makes the expression of surrogate model in a more general way, while the abstract factory design patterns make the extension tools flexible, so that the developed tools can be used in engineering and scientific research. The practices indicate that the efficiency in expression, inspection and usage for surrogate model can be largely improved by using the proposed framework, and a great convenience is provided for the engineering optimization, approximate analysis and rapid visualization etc..

Key words: surrogate model; MathML; expression; SiPESC; scripting languages