

CFD Vision 2030 and Potential for Machine Learning

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*Invited Presentation at
NSF Workshop on Exuberance of Machine Learning in Transport Phenomena
February 10-11, 2020
Dallas, TX*

The NASA sponsored CFD Vision 2030 Study, published in 2014*, was tasked to provide a knowledge-based forecast of the future computational capabilities required for simulation of complex turbulent flows, prevalent in essentially all aerospace vehicle applications, and develop a research roadmap for enabling physics-based prediction of transitional and turbulent flows. The study team developed a research roadmap for computational technology advancements, which includes high performance computing, physical modeling, numerical algorithms, grid generation, knowledge extraction and multidisciplinary analysis and optimization. To what extent machine learning tools could enable development of the envisioned capability will be discussed in this talk. Examples of ongoing research in the area of physical modeling will be provided.

* <https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20140003093.pdf>