Multi-fidelity wake modelling based on Co-Kriging method

The article presents an approach to combine wake models of multiple levels of fidelity, which is capable of giving accurate predictions with only a small number of high fidelity samples. The G. C. Larsen and k-ε-fP based RANS models are adopted as ensemble members of low fidelity and high fidelity models, respectively. Both the univariate and multivariate based surrogate models are established by taking the local wind speed and wind direction as variables of the wind farm power efficiency function. Various multi-fidelity surrogate models are compared and different sampling schemes are discussed. The analysis shows that the multi-fidelity wake models could tremendously reduce the high fidelity model evaluations needed in building an accurate surrogate.

General information
Publication status: Published
Organisations: Resource Assessment Modelling, Department of Wind Energy, Aerodynamic design, North China Electric Power University
Number of pages: 11
Publication date: 2016
Peer-reviewed: Yes

Publication information
Journal: Journal of Physics: Conference Series (Online)
Volume: 753
Issue number: 3
Article number: 032065
ISSN (Print): 1742-6596
Ratings:
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.45 SJR 0.24 SNIP 0.401
Web of Science (2016): Indexed yes
Original language: English
Electronic versions:
Multi_fidelity_wake.pdf
DOIs:
10.1088/1742-6596/753/3/032065
Source: FindIt
Source-ID: 2346248728
Research output: Contribution to journal › Conference article – Annual report year: 2016 › Research › peer-review