

Probabilistic surrogates for floating wind-turbine load emulation

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Publication date
2022

Document Version
Final published version

Citation (APA)
Singh, D., Dwight, R. P., & Viré, A. C. (2022). *Probabilistic surrogates for floating wind-turbine load emulation*. Poster session presented at 2022 PhD Academic Event, Delft, Netherlands.

Important note
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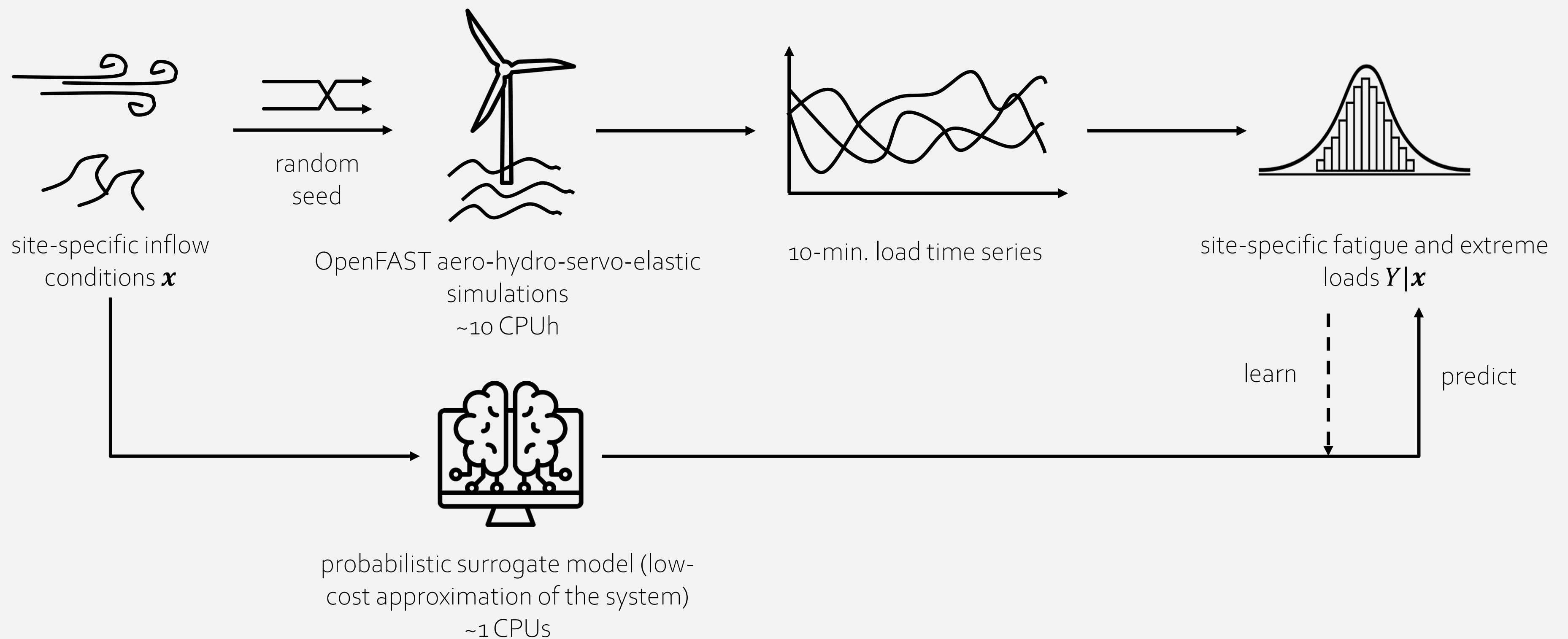
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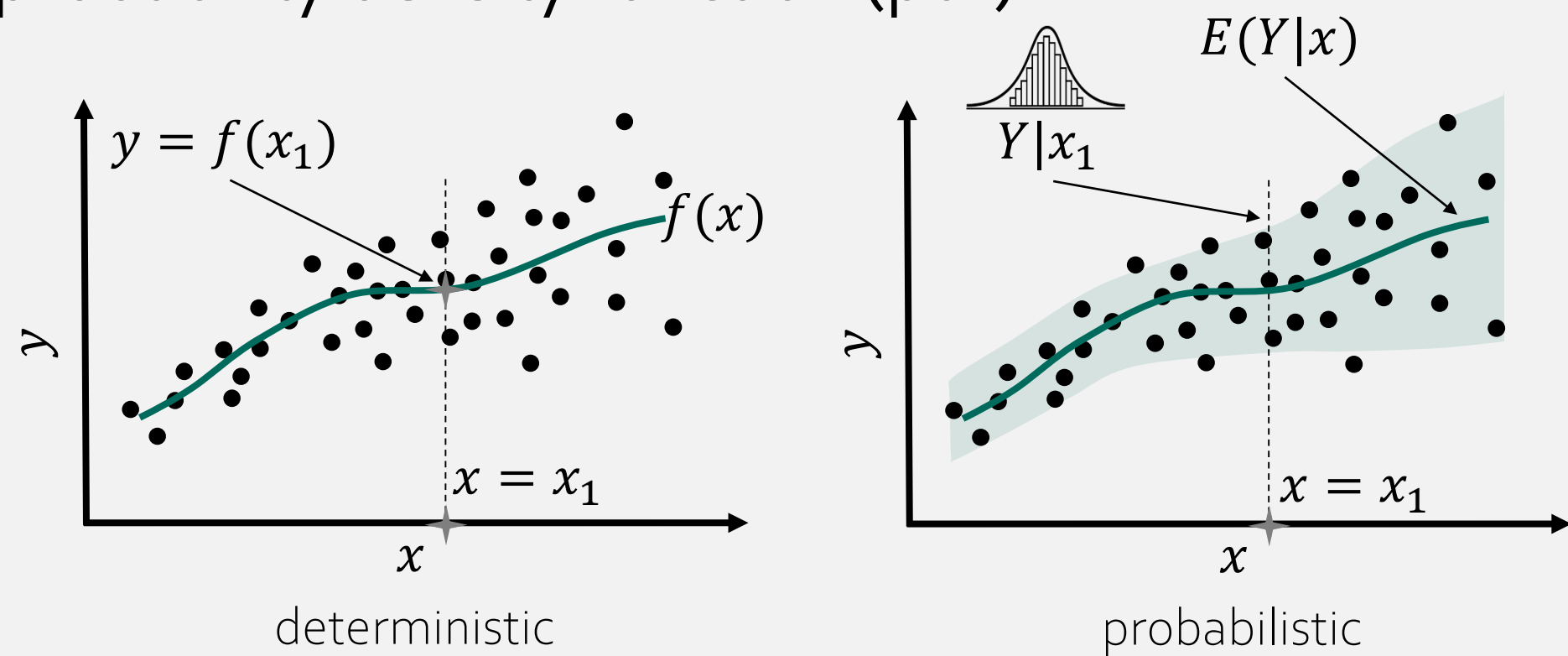


OUTLINE

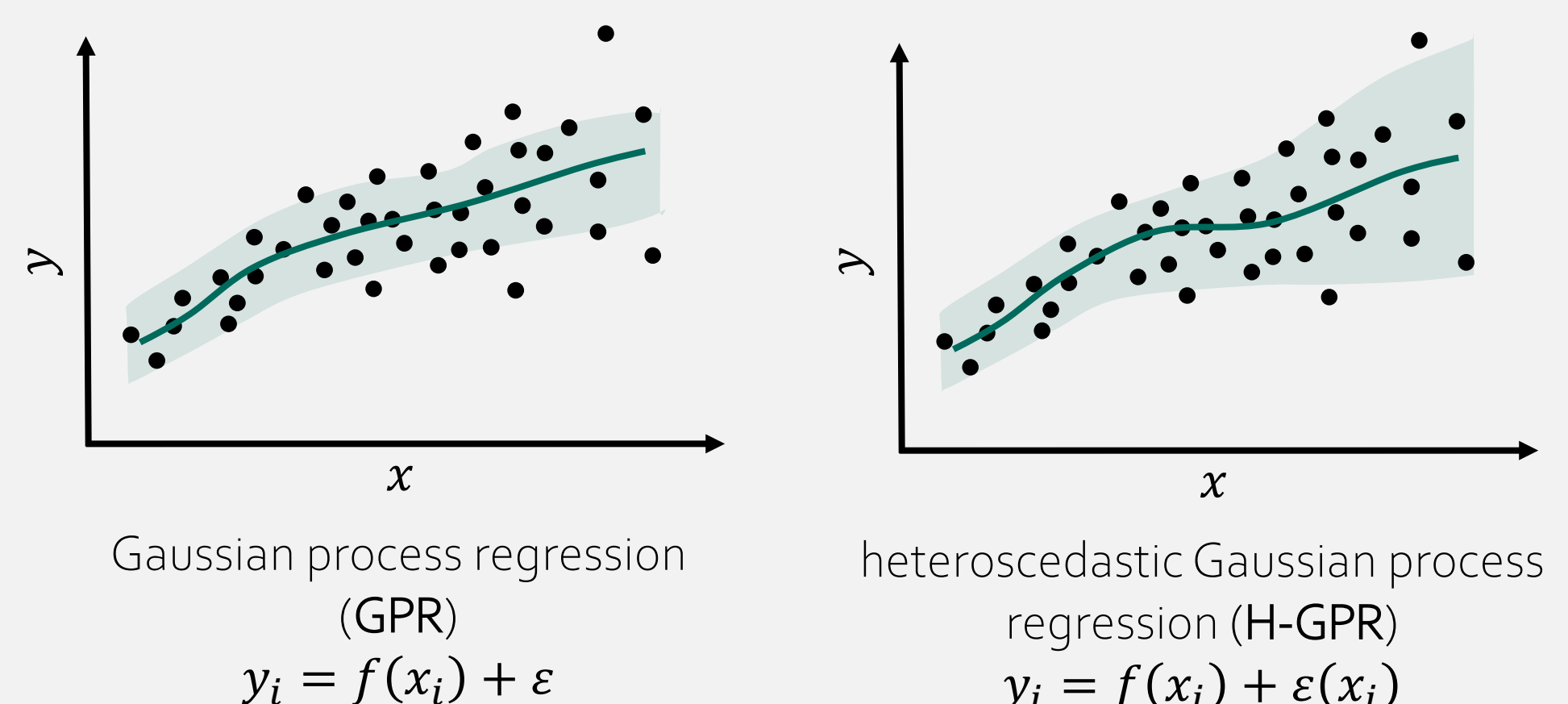


APPROACH

In measurements and in simulations, the wind turbine is subject to **randomly varying inflow conditions**. For a set of mean inflow conditions x , the loads are not deterministic, but random variables of unknown probability density function (pdf).



MODELS



Bayesian statistical methods like the heteroscedastic Gaussian process regression can directly infer the underlying mean and variance of the pdf from a noisy database.

RESULTS

The predicted conditional pdf at specific values of x for a **fixed-bottom offshore wind turbine** are shown. H-GPR shows a **very good agreement with the full order model** and a significant improvement over the more commonly used GPR model. The work is currently being extended to floating wind turbines.

