

Bayesian Time-Series Alignments

An Application to Wind Farms

Markus Kaiser

markus.kaiser@siemens.com

March 28, 2018

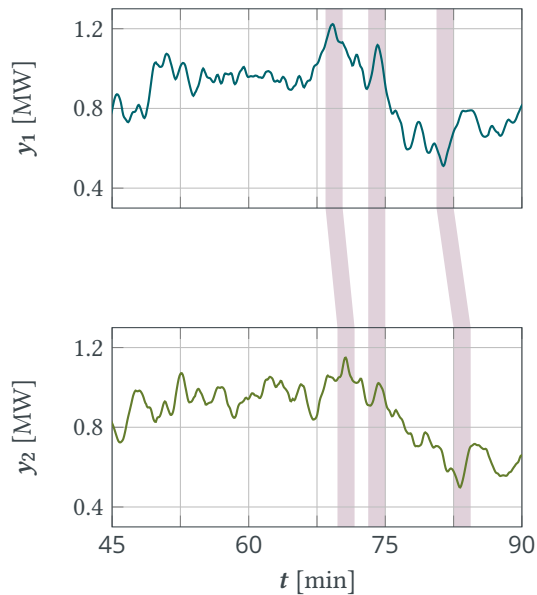
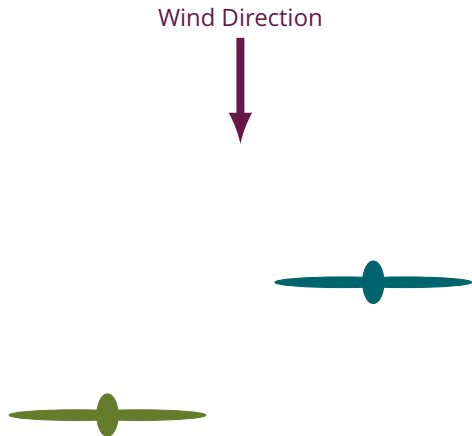
Siemens AG — CT RDA BAM LSY-DE

Wind propagation in wind farms

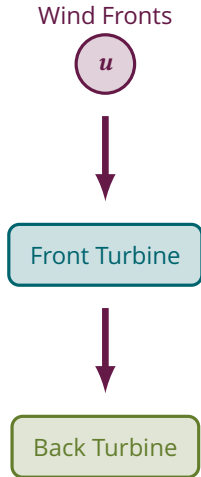
Wind Direction



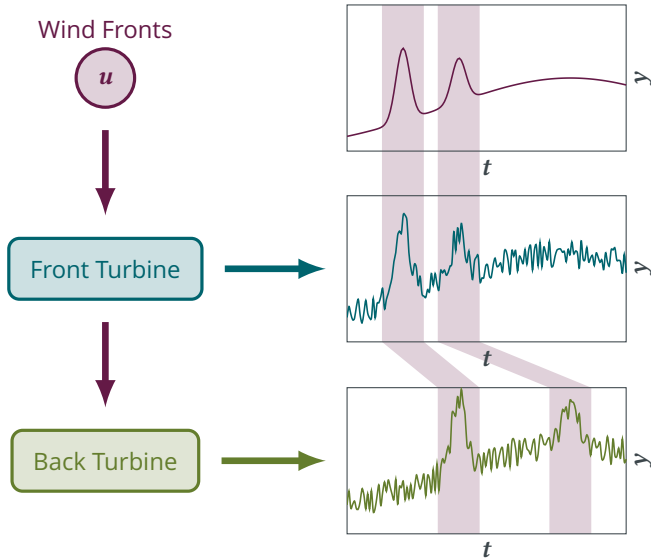
Wind propagation in wind farms



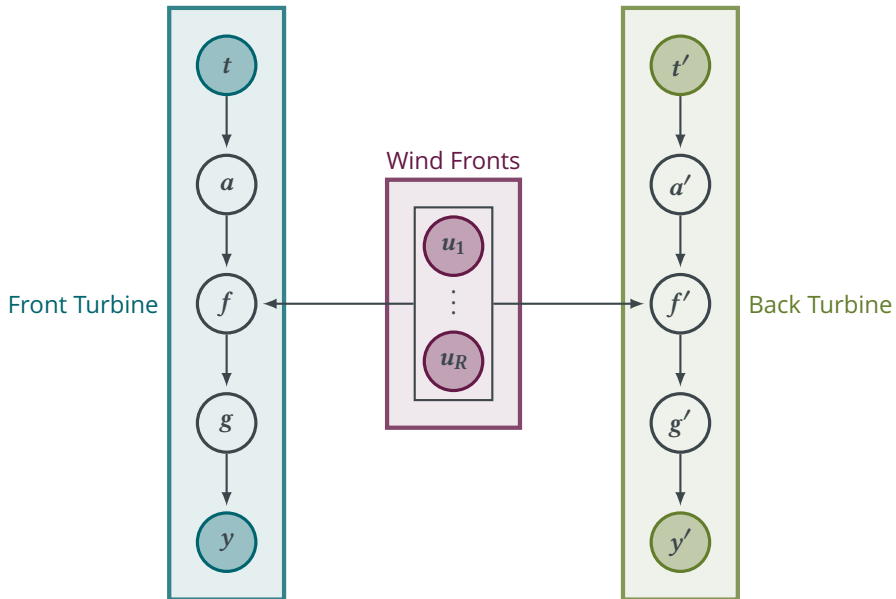
Modelling wind propagation in wind farms



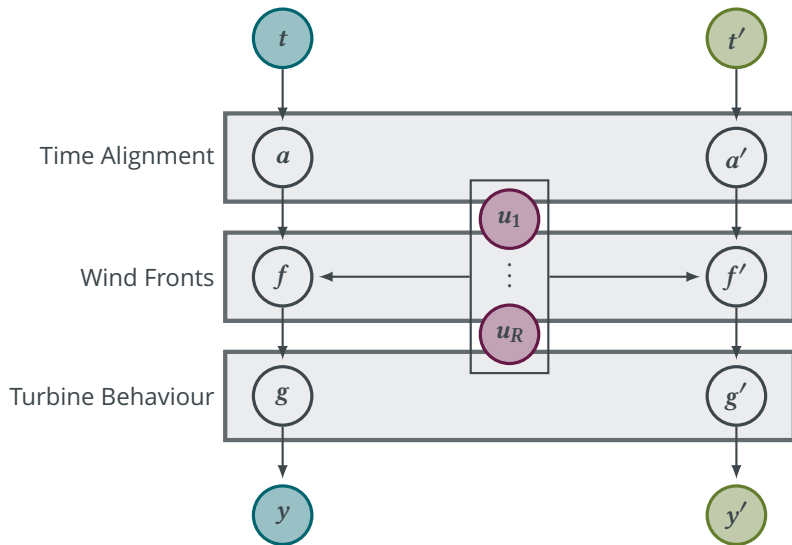
Modelling wind propagation in wind farms



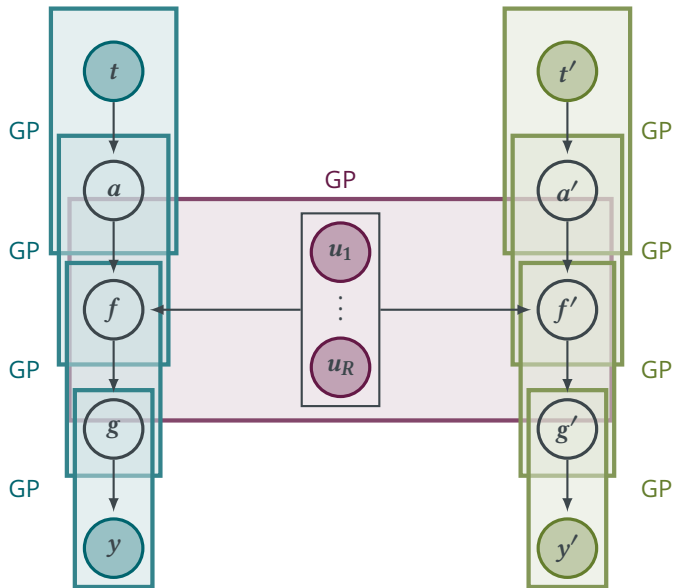
Bayesian model



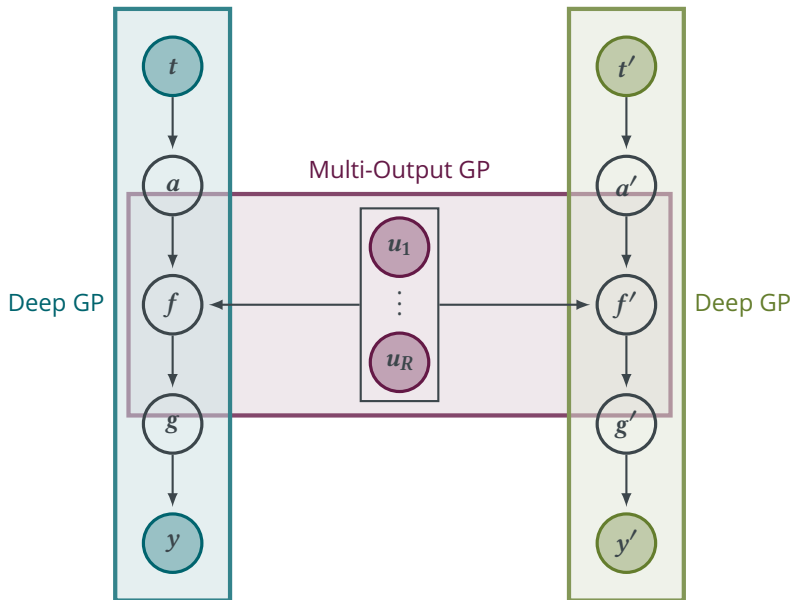
Bayesian model



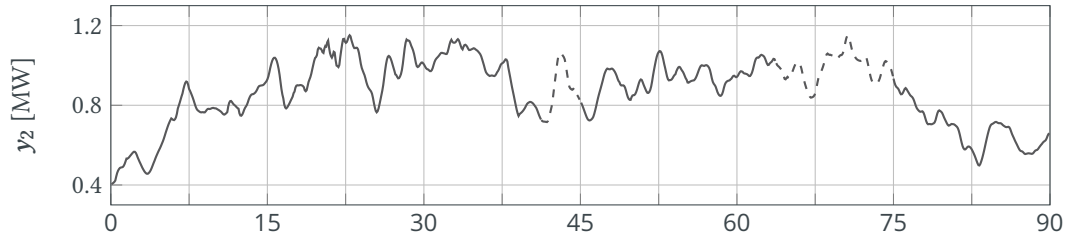
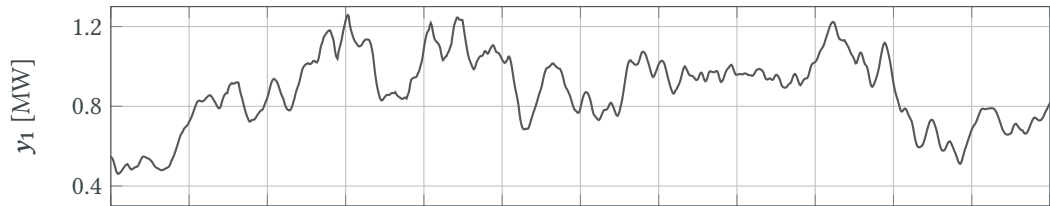
Bayesian model



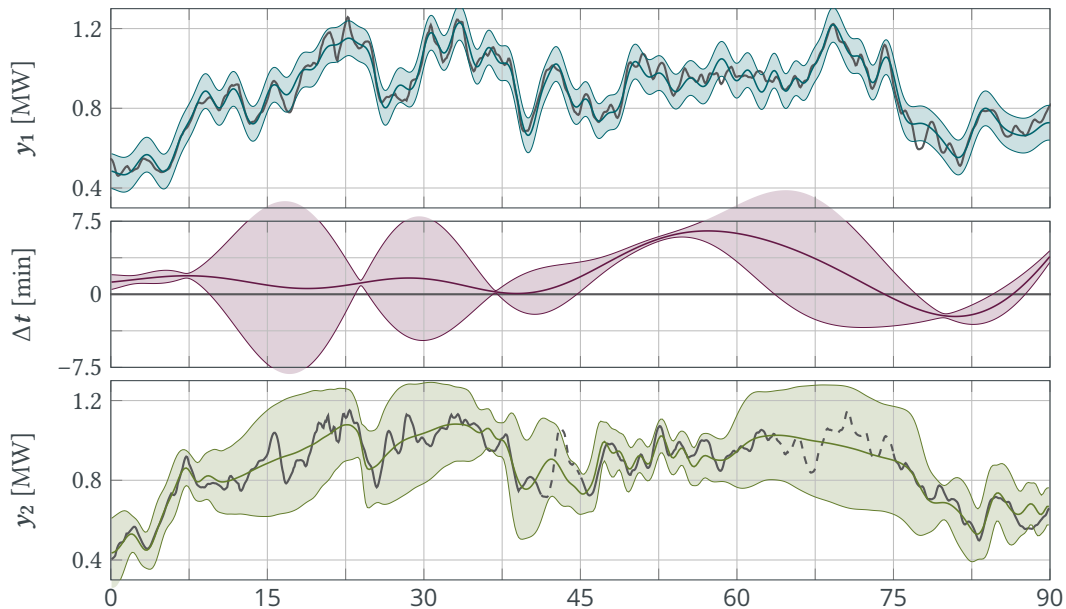
Bayesian model



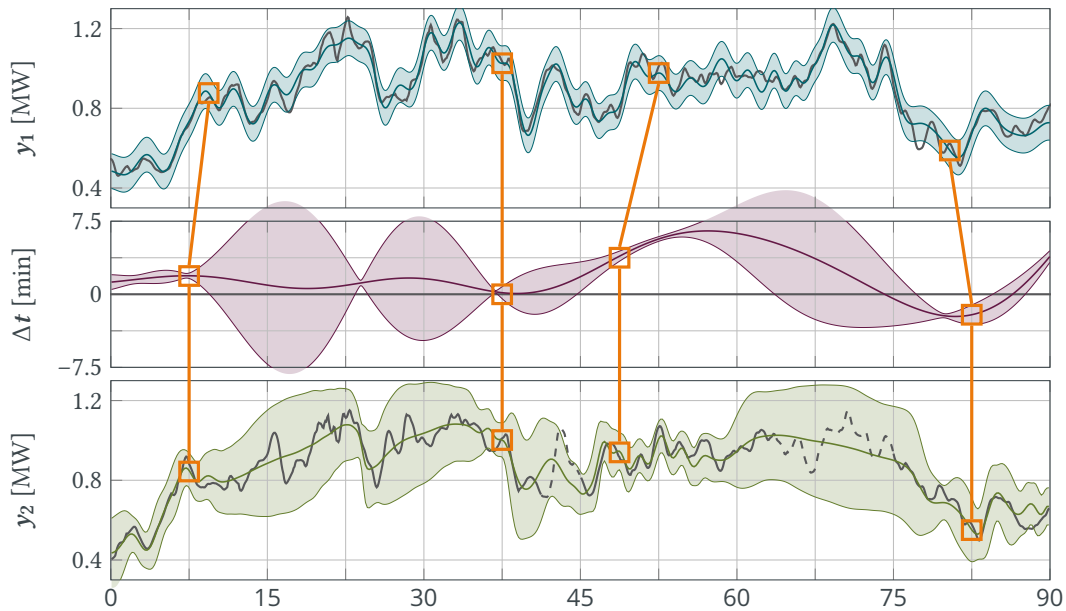
Uncertain time alignment



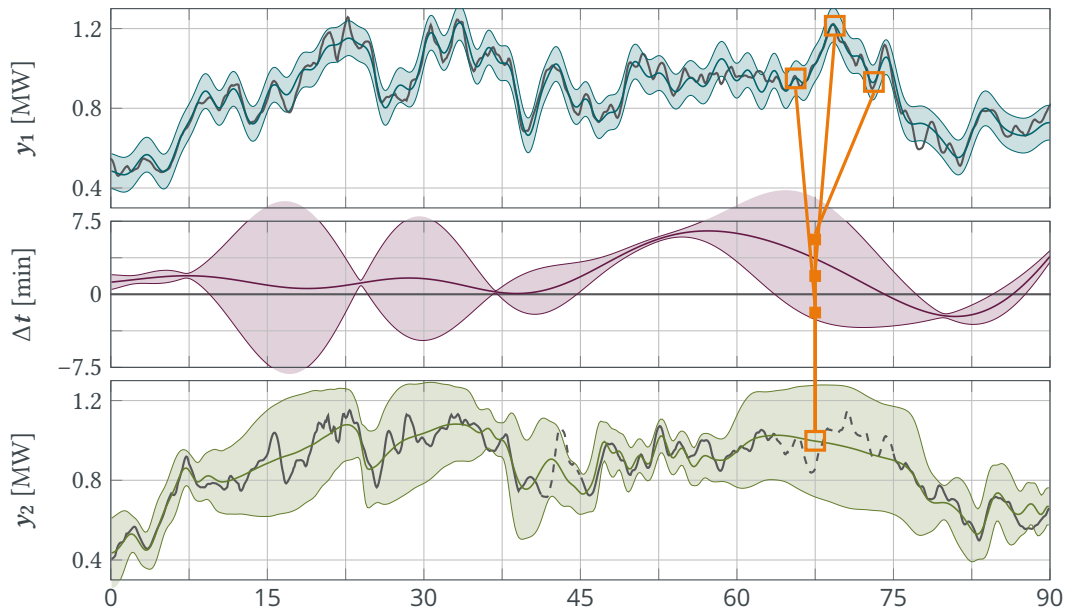
Uncertain time alignment



Uncertain time alignment

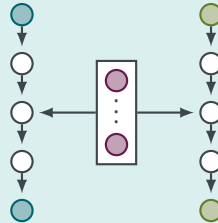


Uncertain time alignment



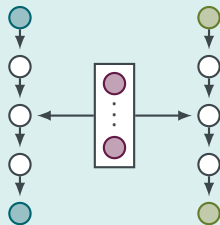
Incorporating further expert knowledge

- Implicit knowledge
- Composite systems
- Domains too complicated for first principles models



Incorporating further expert knowledge

- Implicit knowledge
- Composite systems
- Domains too complicated for first principles models



Decision making under uncertainty

- Uncertain knowledge
- Stochastic systems
- Robust reinforcement learning

