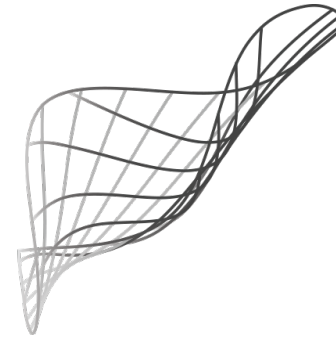


TANGENT WORKS
ADVANCED FORECASTING

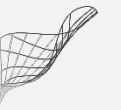


Challenges of energy forecasting for smart grids

Modelling Smart Grids, Prague 11th of September 2015

Tangent Works is a machine learning company
applying information geometry in predictive modelling

Automation combined with speed and volume



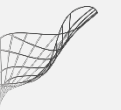
Degrees of Freedom in a Typical Load/Production Forecasting Scenario

DOF1

- explanatory variable candidates
- their respective time-delays candidates
- possible interactions or other nonlinearities e.g. MA, etc.

DOF2

- non-parametric regression (basis type, num. of terms, penalty term etc.)
- neural net (num. of units, nonlinear optimization, etc.)



TangentWorks = (DataScience + Information Geometry)

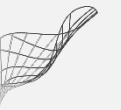
Translated into a new solution:

Tangent Works Information Modeler (TIM)

generates one single adaptive operational model on the fly

Based on:

- information geometry
- information criteria
- principles of parsimony



BENEFITS

The Tangent Works engine can generate, re-calibrate or re-generate predictive models in an automatic mode, for high volumes and at high speed. As such existing applications can be optimised for speed and accuracy or new applications can be designed for any industry.



Large Quantities of Models



Efficient on Computing Time



High Level of Adaptability



High Level of Automation



Maintainable by Business People



Cost Saving

Suitable for a variety of business challenges:



Demand & Load Forecasting



Complex Pattern Recognition



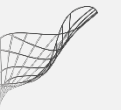
Anomaly Detection



Complex Classification Problems



Machine-to-Machine Processes Integration



We are happy to answer your questions and looking for a cooperation.

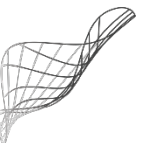
- 1. We can deliver end to end solution tailored for concrete forecasting scenarios.*
- 2. We are able to offer our engine for 3rd party system integrators or legacy systems.*

Thank you.

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81106 Bratislava
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9830 Sint Martens Latem

TANGENT WORKS
ADVANCED FORECASTING





Data Science for Energy

- Discover how Tangent Works improves
- performance in the energy industry.

The energy industry is moving from a unidirectional steady flow context to a multi-directional operating environment with increasing complexity and uncertainty

=> (real time) forecasting in order to optimize balancing of demand and supply becomes critical

=> The Tangent Works engine can manage large volumes e.g. a large portfolio of industrial/business/ residential customers

=> Automatic and instant model building (and re-calibration) of (customer) load profiles (from T+1 till ...) for consumption and technical data

The Tangent Works Information Modeller is already available as a plugin for MetaLogic and Hakom applications.

The combined solution delivers:

- demand forecasting for electricity, gas, heating and cooling operators
- load forecasting for distribution network operators
- forecasting for wind power and solar power units

Pilot:

- network connectivity analysis in energy distribution networks
- fraud detection in energy distribution networks

Roadmap

- forecasting for energy trading
- predictive maintenance for power plants and power generation equipment