DATAPRED

MACHINE LEARNING FOR LOGISTICS AND RETAIL

Machine learning, logistics and retail

Diagnosing market trends and testing management strategies are critical

- Unexpected changes in consumer behavior and logistics requirements are a major risk
- Delivering value based on data analysis requires sophistication

Existing optimisation tools don't leverage internal and external data very well...

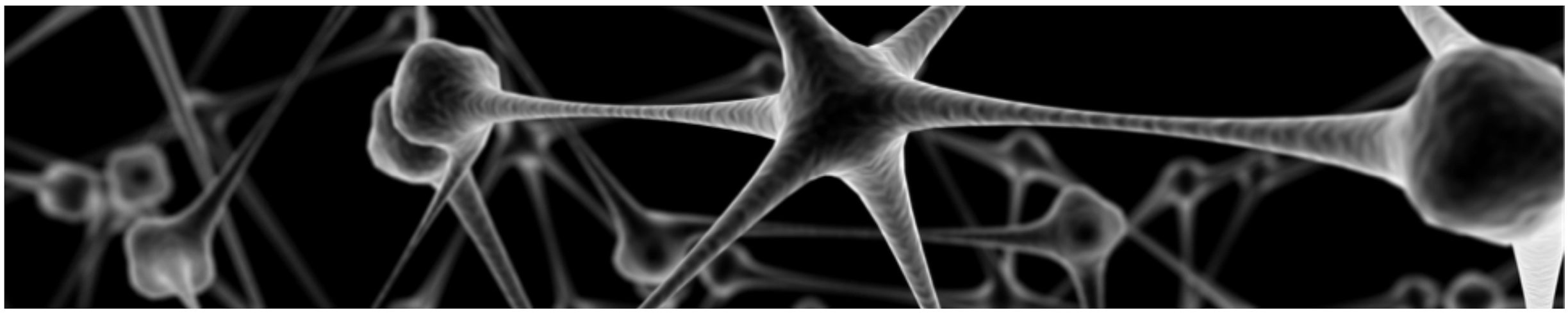
- The raw (as opposed to pre-processed) data they use doesn't capture your expertise
- Their methodological assumptions are often simplistic
- They don't tell you which timeframes and variables really matter
- Their overfitting tendency weakens their predictive power

...with potentially dire consequences

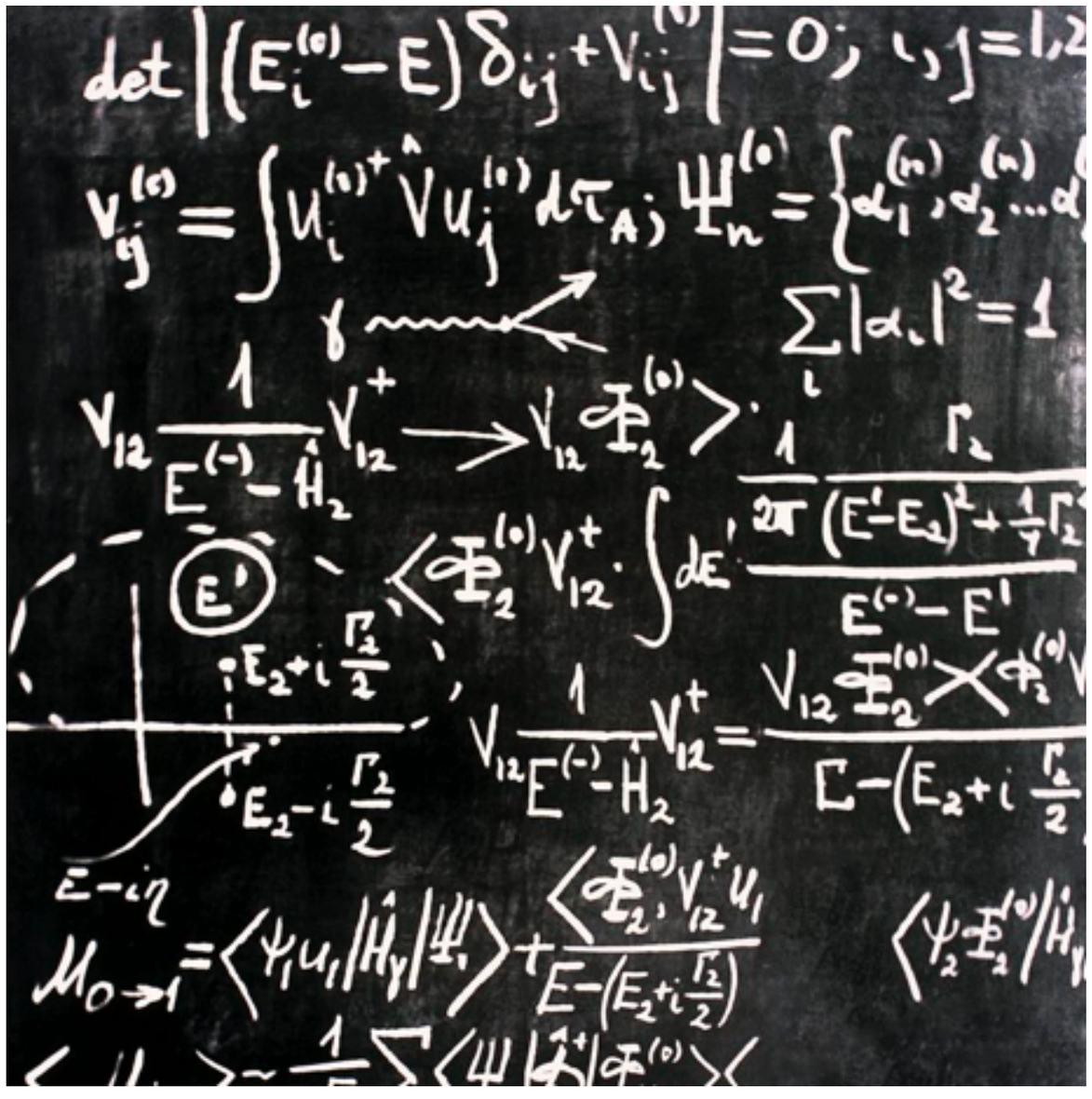
- Unstable management rules based on unreliable forecasts
- Bad assessment of demand and supply chain risk
- Suboptimal procurement and inventory management decisions
- Vicious circle of inadequate models and fallacious interpretations

Machine learning provides efficient answers to these problems

- Automated model construction (no assumptions)
- Greater analytical and predictive power
- Increased efficiency in big data conditions
- Models that are more flexible and easier to interpret



Scientific specificities of real-time machine learning



- The features generated when representing time series are homogeneous, interpretable, robust and multi-scale
- Overfitting is controlled during the generation of models
- Data snooping is controlled during the backtesting of management rules
- The aggregation strategy for management rules is calibrated in real time

The Datapred solution

Datapred overview

- Datapred is a solution for **clarifying and testing marketing and supply chain management ideas**, and includes:
  - A flexible system for representing consumer and logistics time series
  - A proprietary machine learning engine for generating models
  - A system for quickly adapting to market shifts
- Datapred is **not a management robot**. It is there to **augment your industry expertise**, not to replace it

10 years of academic and industrial research

Nicolas Mahler, Founder & CEO

Professional experience in market finance and business consulting

- Mahler Consulting - Data analysis and statistical modeling advisory
- BNP Paribas - Quantitative Analyst
  Development of trading strategies on futures market

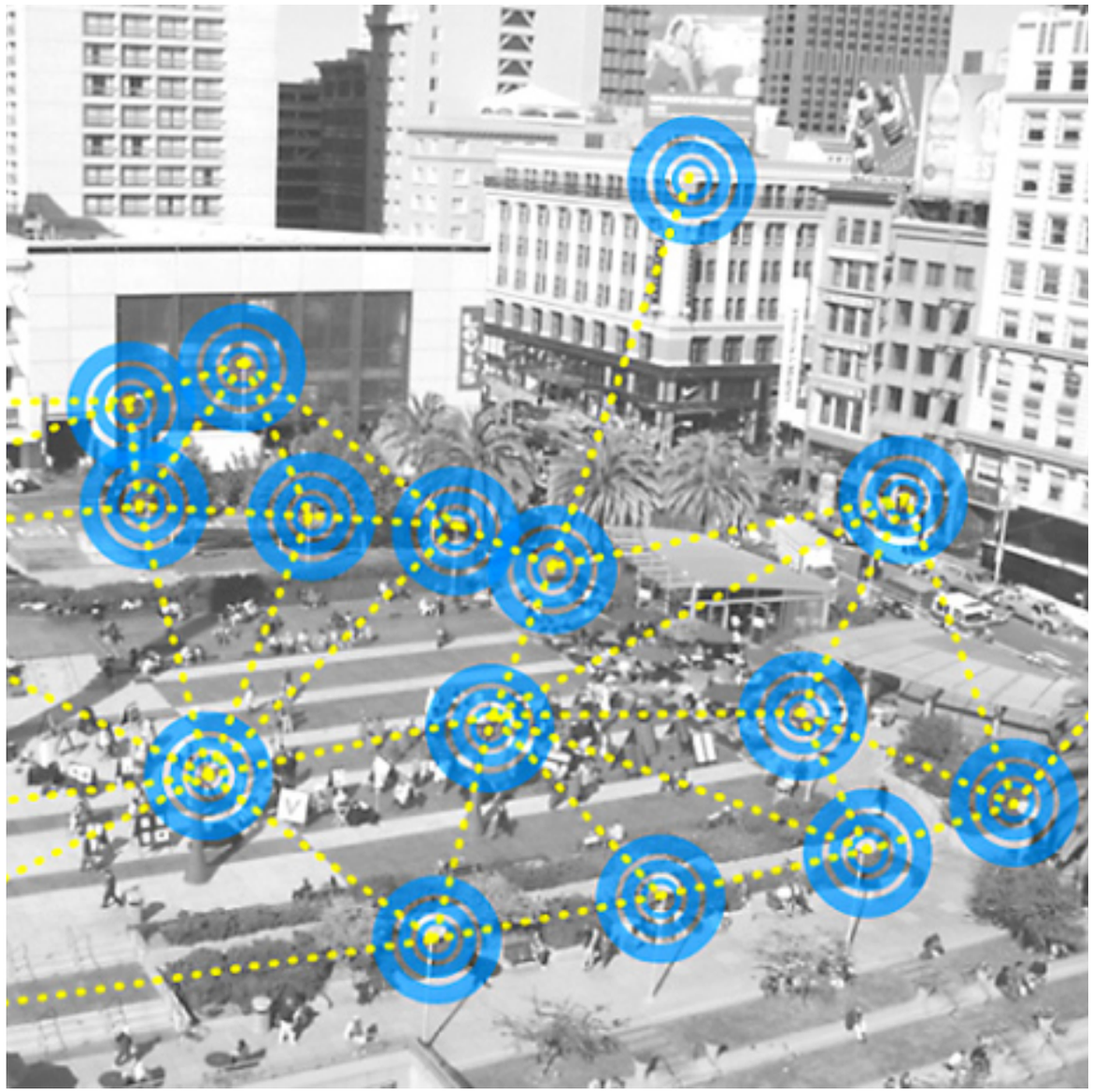
Education as a data scientist

- Ecole Normale Supérieure de Cachan - PhD, Machine Learning for Finance
- Université Paris VI - MSc, Applied Probabilities
- Ecole des Mines de Paris - BSc, Engineering

Main benefits of Datapred

- Significant over-performance compared to existing solutions
- Resistance to sudden industry shifts
- Rigorous validation of your supply chain management strategies
- Identification of alternative strategies

Ready for the Internet of Things



- The revolution is coming
  - 50 billion connected objects in 5 years[1]
- Examples in logistics and retail
  - Geolocation of parcels and transport fleets
  - Beacons on warehouse and store shelves
- Datapred is optimized for the IoT
  - Scalable for millions of real time data
  - Native integration of heterogeneous data

(1) Source: Ericsson

Selected use cases in logistics

- Demand forecasting
  - Volumes
  - Price elasticities
- Inventory management
  - Forecasts
  - Distribution
- Transport planning
  - Risk management
  - Route optimization
- Predictive maintenance

Selected use cases in retail

- Demand analysis
  - Demand forecasting
  - Prices elasticities
  - Store location
- Consumer behavior
  - Segmentation
  - Merchandising
- CRM
  - Recommendations
  - Promotions
  - e-commerce

Case study
Prediction of product inventory

- **The client:**
  - French pharmaceutical and personal care company
- **The challenge:**
  - Predict monthly sales and inventory for a portfolio of 40 products
- **The process:**
  - 2 weeks for formalizing the challenge and building the proof of concept
  - 2 months for creating the analytical models and testing them on historical and real-time data
- **The model:**
  - Predictive sales and inventory models for appropriate time windows
  - Optimal combination of the predictive models
- **The outcome:**
  - A cloud-based framework for analyzing product inventory data and generating inventory management rules
  - **+30% on forecast accuracy** compared to previous strategy

Simple and secure architecture

Secure data transfers

- Internal and external data (CSV) over secure connection
- No trade secrets disclosed

Performance computing

- Computation of data representation, prediction models and P&L optimized model combinations
- In the cloud or on client premises

Daily deliverables

- Daily reports (CSV, Excel or online) over secure connection
- Include predictions, interpretation and P&L features

Stages of a Datapred project

1. Demonstration

- Test of Datapred on data and inventory management strategies chosen by the client
- Generation of efficient models in that environment

> **2-3 meetings**
> **Free**

2. Proof of concept

- Identification of efficient management rules based on the models
- Evaluation of their P&L potential

> **1 month**
> **Consulting fees**

3. Production

- Installation of the solution (e.g. data flows, hosting)
- Ongoing optimization of the models

> **Ongoing Subscription**

Contact

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