in    Search        ⌂   👥³   🗂   💬   🔔⁴   👤  |  ⋮⋮⋮    Reactivate Premium



# Big Data Analytics and Artificial Intelligence

Published on December 12, 2019

**Sebastian Fritz-Morgenthal**
Director, Head of Global Risk at Bain & Company

40 articles    ✓ Following

An expert workshop in Brussels, November 26, 2019

Peter Neu and Sebastian Fritz-Morgenthal

We were invited to a workshop organized by the Fin-Tech project (Fin-Tech HO2020), funded by the European Union's Horizon 2020 research and innovation program. Representatives of the European Central Bank (ECB), the European Banking Authority (EBA) and the European Banking Federation (EBF) presented their views on Big Data Analytics (BDA) and artificial intelligence (AI). Also, one of the participants gave a scientific presentation on explainability of complex models. The workshop was rounded up by a panel discussion: The panelists discussed whether banks should use AI and if so, what the best practices would be.

**Jochen Papenbrock** (Firamis) and professor **Paolo Giudici** gave an introduction to the topic and an overview of challenges and opportunities for the industry. They made a case for developing a truly European fintech risk-management framework which would use AI as a building block.

**Gilles Bouvier** (from the Single Supervisory Mechanism (SSM) at the ECB) demonstrated a European banking supervisor's approach toward fintechs. In his view, fintechs are transforming the banks' business model. Banks can adapt, 💬 Messaging

Reactivate
Premium

The following are his pieces of advice based on his interaction with banks and fintechs over the last three years:

·       Try to implement models with as little black-box approach as possible.

·       Have a clear investment strategy and plan with regard to your technology.

·       Have a clear view of your bank in 10 years' time. Will it still be a product developer or just a holder of client relationships?

His key takeaway was that PSD2 can become a game changer for the industry.

Thanks to **Andreas Papaetis** (EBA), we had a first glimpse of the EBA's report on big data and advanced analytics, which, provided the board signs off on it, will be published in a couple of weeks. From what he showed us, firstly, it is a must-read, and secondly, it covers all relevant topics: market development; involvement of humans and explainability; bias/fairness; data protection and its effect on risk management; customer engagement; product development; and process optimization within banks. He further elaborated on the importance of data management for both developers and banks. That includes the type and source of data used, data security and protection as well as data quality. Finally, Andreas gave hints on organization and governance requirements, which include: governance structure, strategy and risk management, transparency, a clear process on external development and outsourcing, the skills and knowledge to be held in-house.

**Sébastien de Brouwer** (EBF) presented his views on risks and opportunities related to BDA and AI.

In his opinion, regulatory frameworks need be able to allow a deployment of digital strategies for banks. He also said that the use of AI is expected to offer around €400 billion in cost savings. He wondered whether data sharing between the banking sector and other sectors, such as retail, telecoms, etc., might be possible.

In his opinion, regulations should:

·       be principle-based;

·       be technology-neutral;

·       ensure common ethical standards on a European level;

·       take global competition into account.

He believes that the conflict between data maximization via advanced analytics

Messaging

**Jochen Papenbrock** gave a talk on explainable AI, pointing out why such models need more than just a graphical representation on linear dependencies. In his view, one measure that could help provide transparency in the AI model output is the so-called Shapley value. He combines it with graph theory to make the model behavior transparent and thus, easier for users to understand.

The day was rounded up by a panel discussion with **Gilles Bouvier** (ECB), **Andreas Papaetis** (EBA), **Barak Chizi** (KBC Bank), **Davide Corda** (Intesa Sanpaolo), **Peter Neu** (DZ Bank) and **Sebastian Fritz-Morgenthal** (Bain & Company)—the moderator.

We started the discussion agreeing on a definition of AI:

It enables computer systems to perform tasks that would normally require human intelligence, which include visual perception, speech recognition, decision making, and translation between languages. Thereby, it simulates human memory and learning abilities. There is a differentiation between weak AI ("concrete problem solving") and strong AI ("creative intelligence")

Peter Neu gave examples of weak AI:

·　Chatbots used in customer service centers: general learning process, static data based on question/answers, i.e., no context filter. The goal is process automation and efficiency/cost reduction.

·　Text mining, e.g., contract pre-processing (based on standardized formulations in mortgage contracts), automated dispatcher functions for routing tasks to specific departments in order to speed up processing.

·　Optical Character Recognition (OCR) for scanning documents and speeding up processing (e.g., trade finance, bank wire/cash transfer).

·　BDA: real-time data analysis to support capital markets' trading activities (e.g., quoting a price to client within 10-14 seconds when market making).

·　Robo-advice, consumer advice and target marketing: recommendation of optimal (static) investment portfolios or next-product-to-buy based on the recognition of customers' life cycle patterns and account information (PSD2).

·　Robotic Process Automation (RPA): in general only capable of automation, it does not include any learning features.

·　Credit scoring and rating: pre-processing or automation of credit file analysis based on objective obligor data (personal data, account balance data, employment status, residential status, balance sheet information, debt/equity leverage), calibration/optimization of cutoff points.

Messaging

data privacy protection; examples include:

· visual perception to process non-life insurance claims;

· biometric ID (face, fingerprint) to open a cash account;

· fraud detection, including bots recognition (machine against machine).

The three bankers shed some light on how AI is positioned within their banks. Barak Chizi is a data scientist and reports directly to the CEO of KBC, hence the topic is high on the agenda of the bank's executive management. Davide Corda joined Intesa Sanpaolo in 2018 from Accenture. He believes his role is twofold:

· to ensure swift development and implementation of methods, tools, etc., based on advanced analytics;

· to make sure that the C-suite and board members are fully aware of these developments.

At DZ Bank, approximately 5% of the total investment budget is spent on AI—a sizable amount—still only a fraction of the total investment, which is still dominated by digitalization and automation, replacing legacy IT systems and implementing regulatory requirements.

The discussion then moved on to the question of explainability of AI-based models. Explainability is key for banks as customers and regulators will expect their decisions to be transparent and well documented. This is not easy as many of their decisions are inherently based on statistical models. This is challenging but not new—consider how the current regulatory framework is not principle-based, but rather model-/data-based. Peter Neu described the three levels of explainability:

· technical explaination the model (data used, math, code, output data): It presents no problem for AI systems as they are all based on learning from historical data and applying a well-defined mathematical algorithm (the Hamiltonian energy function, a (stochastic) differential equation, a simulated annealing algorithm) and huge computational power);

· bank executives "understanding" the decision-making process in order to fulfill their responsibility of proper conduct: It is solvable as executives in banks are accustomed to using complex models;

· fulfilling a legitimate requirement of customers (and society overall) to "explain" and "document" the decision-making process in banks, which is inherently tricky as the real answer is (a) the math or (b) the experts. The more strong-AI-systems are used, the more important the issue becomes.

The panelists as well as the audience posed a question: Can we actually rely on decisions made by models alone? This question is not exclusive to the AI model in banks, it is also relevant when we enter a driverless train, rely on model-based

Messaging

Once we start to trust the decisions made by autonomous machines, the models can also evolve, i.e., become self-learning. Peter Neu explained typical "machine learning" stages:

· collecting large historical data sets;

· using them as input for training (and independent testing);

· applying these trained models to new real-world problems;

· re-calibrating once new data is available.

As such, these systems are based on historic data and hence the past, and calculation power. There is no "free will", "consciousness", or what humans would call "intelligence". In this sense, an animal is more intelligent than any of these AI algorithms on supercomputers.

It might seem surprising given that the self-learning chess/(the board game) Go computer program—AlphaGo (and its later iterations AlphaGo Zero and AlphaZero)-—is stronger than any human being and more "intelligent" than the current world chess champion, Magnus Carlsen. However, there is a difference between winning even the most complicated game of chess or Go and solving real-world problems: Chess and Go are still much simpler since you can write down a complete set of rules which define the game (it is a closed systems, as a physicist would say). Try this with life…

Gilles and Andreas gave us a regulator's perspective on minimum requirements that need to be met in order to set up and run AI systems:

· explainability in a technical sense (i.e., data, model): Trust the model's decision from a user's perspective;

· IT security, private data protection and documentation;

· integration in executive decision-making ("how to run a bank");

· communication with stakeholders (customers, regulators, the government, society).

The last question we debated on was whether AI algorithms should actually be fair. Barak stated that fairness should not play a role in developing and applying algorithms. This sparked off an intense debate with audience members, some of whom supported his view and others who disagreed with him.

Should algorithms be fair? Can they be trusted if they are not fair? Are fairness and discriminatory power not contradictory? We are interested in your opinions.

Report this

Messaging

in 🔍                                    🏠  👥③  💼  🗨  🔔④  👤 | Reactivate
                                                                        Premium

#artificial_intelligence #machine_learning #bigdataanalytics #riskanalytics #riskmanagment  #regulation
#fintechstartups

---

Like    💬 Comment    ➦ Share                                   13 · 2 Comments

### Reactions

👩 👨 👨 👩 👨 👨 👩 👨  +5

## 2 Comments

👤   Add a comment...                                                         📷

🏛 **fintech-ho2020.eu**
     332 followers
     thank you so much!                                                      36s •••
     Like   Reply

👤 **Dr. Jochen Papenbrock** • You
     CEO and founder of Firamis GmbH
     thanks **Sebastian Fritz-Morgenthal** and **Peter Neu, PhD** for your contributions to this **fintech-    45m •••
     ho2020.eu** event in Brussels organised by **Firamis GmbH**.
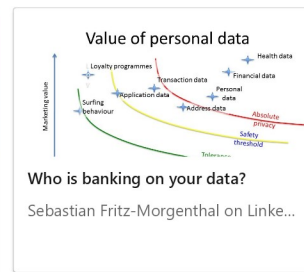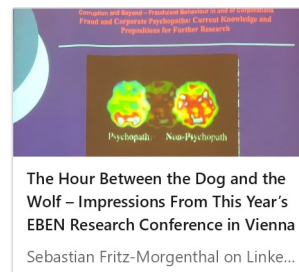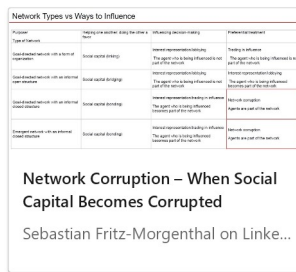     Like   Reply   |   2 Likes
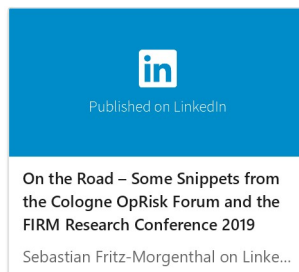
👤

**Sebastian Fritz-Morgenthal**
Director, Head of Global Risk at Bain & Company

✓ Following

## More from Sebastian Fritz-Morgenthal

| | | | |
|---|---|---|---|
| Published on LinkedIn | Network Types vs Ways to Influence | Corruption and Beyond | Value of personal data |
| **On the Road – Some Snippets from the Cologne OpRisk Forum and the FIRM Research Conference 2019** | **Network Corruption – When Social Capital Becomes Corrupted** | **The Hour Between the Dog and the Wolf – Impressions From This Year's EBEN Research Conference in Vienna** | **Who is banking on your data?** |
| Sebastian Fritz-Morgenthal on Linke... | Sebastian Fritz-Morgenthal on Linke... | Sebastian Fritz-Morgenthal on Linke... | Sebastian Fritz-Morgenthal on Linke... |

**See all 40 articles**

---

**Linked**in

| About | Talent Solutions | Community Guidelines |
|---|---|---|
| Careers | Marketing Solutions | Privacy & Terms ⌄ |
| Advertising | Sales Solutions | Mobile |
| Small Business | Safety Center | |

❓ **Questions?**
     Visit our Help Center.

⚙ **Manage your account and privacy.**
     Go to your Settings.

Select Language

| English (English) |

LinkedIn Corporation © 2019

👤 Messaging