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Reacfin **Masterclass** **(IA|BE CPD eligible)**

Data Science for Insurance Managers

Fully online

Reacfin s.a./n.v. Place de l'Université 25 B-1348 Louvain-la-Neuve
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About the **masterclass**

Data science comes from the recent merging of three active fields: computer science and data technology, mathematics and statistics and, finally, a business field, in our case, the insurance industry. This merging as well as progress of technology in terms of internet availability and capacity storage led to the formalization of data science. People's interest in this topic increased for the last ten years and many data-driven business models emerged in the industry. Making the best use of the data available became more and more of a critical strategy for every company. Insurance firms also started to set up these kind of practices to improve their services and, more generally, to create value. We can summarize by saying that data science consists of collecting, decrypting and analyzing heterogeneous data for practical use cases.

This training focuses on understanding why, where and how data science affects the insurance business. No coding here, but a large overview of data science applications in insurance. What can artificial intelligence be used for? What are the profiles I need to implement this in my business? How to best organize a data science project? Who are my partners for data science projects? And, finally, the more important question: how can I, as a manager, challenge positively data science projects in my team?

The full training program is worth 18.5 Continuous Professional Development (CPD) points at the Institute of Actuaries in Belgium (IA|BE).

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Practical **content**

Webinars
12 hours of live sessions to consolidate and expand practical knowledge
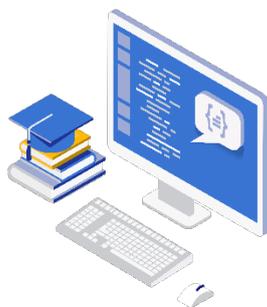
- **Topics** covered **in depth** during the webinars.
- Opportunity to **ask questions** and interact with the trainers.
- Webinars will be recorded so that you can watch them later if you were not available or want to review the material. Recording available up to 2 months after the training.

Practical examples
Several real-world examples to study concrete impact

- Presentation of **practical examples.**
- **Discussion** with the participants.

E-learning capsules
6.5 hours of e-learning to build the foundations

- **Pedagogical** presentation of the concepts with examples.
- To be followed by the participants **whenever they want** before the webinars, as a pre-requisite.

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About the **agenda**

Tuesday 8th March 2022 at 9.00 CET

Pre-requisite (1h30):
- **2 e-learning capsules:** Introduction to data culture, Main principles about data
- **1 White Paper:** Building a Standardized Data Analytics Workflow

Part 1: Understanding the data science pipeline (1h30)

Keywords: data science project, organization, business problem, data science pipeline

Description:
Insurance companies experienced many difficulties in implementing their first data science projects. Collecting and structuring the internal data is usually a painful activity, hiring and keeping the good profiles is another challenge, choosing the right technology is complicated… Moreover, data scientists regularly face difficulties in connecting with business and solving real business problems. Therefore, many of the tested business cases did not provide adequate returns. The industry needs to build on lessons learned to standardize data analytics projects. That is the reason why we start this training by presenting the typical issues of data science projects and how a robust data science pipeline can help in improving practices.

Content:
- What are data science, machine learning and artificial intelligence?
- Evolution of data analytics in financial institutions
- Difficulties in running data analytics projects: case studies
- Standardizing the data analytics workflow: key success factors for managers
- How to support standardization

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Part 2: EU proposed regulation for Artificial Intelligence (1h30)

Keywords: EU regulation, artificial intelligence

Description:
We will explain the key principles of the proposed new EU regulation and analyze why and how it will influence the activity of insurance companies, today and tomorrow, in light with the current developments in Artificial Intelligence (AI).

Content:
- AI for Finance/Insurance
- EU proposed regulation for AI
  - Why?
  - Principles
  - Applying the regulation
- Impact of the regulation on trends and strategies for insurance companies

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Module 2: The data puzzle and its links to the business
(Total duration: 4h30)

Pre-requisite (1h30):
− **3 e-learning capsules:** Data preparation and data quality, Open data, Web scraping

Part 1: The Business problem (1h)

Keywords: business problem, investment, risk

Description:
Identification of the business problems that are relevant to be solved with the data science toolkit is the first step of our data science pipeline. We will discuss a few concrete examples in this module. For each of them, we will look at the expected benefits versus the investments and risks taken.

Content:
− Define the business problem
− Timing & resources
− Performance metrics
− Key factors of success
− Key risk factors
− Prioritisation of data science projects: assessment check list and strategic roadmap

Part 2: Data management (2h)

Keywords: data engineering, data cleaning, data storage

Description:
Data is the raw material of any data science achievement, and like in any other field, you cannot make gold with garbage. Particular attention must therefore be paid to data, whether internal or external. A significant portion of the resources and budget of a data science project is therefore devoted to this stage of the pipeline.

Content:
− Data sources and forms
− Main data managements steps
  • Sourcing & data engineering
  • Data cleaning & preparation
  • Exploratory data analysis
  • Feature selection & feature engineering
  • Data segregation
− Focus on data quality
  • Assessing data quality
  • Cost of poor data quality and advantages of good data quality
  • Regulatory framework
  • Types of problems and how to solve them

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Module 3: Demystifying the use of data science models
(Total duration: 4h30)

Pre-requisite (1h30):
- **2 e-learning capsules:** Data analytics and statistics, Introduction to machine learning

Part 1: Modelling (2h)

Keywords: machine learning, model development, overfitting, error measures

Description:
When the data is clean and ready, the next step will be to finally use it for modelling purposes. We will learn about statistical learning models and answer the following questions: what are the tools and software that are used, what are the people needed in my organization to implement these models? Examples will help you understand this key step in the project.
The focus is on understanding the main concepts rather than the mathematical details

Content:
- Types of models and applications along the insurance value chain
- Main elements to have in mind with statistical learning models
- Challenging models as managers
- Truth and myths in artificial intelligence

Part 2: Deployment and monitoring (1h)

Keywords: deployment, monitoring, follow-up

Description:
In many cases, data science projects never go further than being a nice one-time study. They fail in being deployed in the company, really used and regularly monitored. This module gives ideas to make sure this crucial step is successful in your data science project.

Content:
- Operationalization of machine learning models
- Deployment forms: dashboard, API, apps…
- Measure & compare performance: the champion vs challengers approach
- What must trigger a retrain/refresh of a model

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Module 4: Being part of an insurance data science environment
(Total duration: 5h00)

Pre-requisite (2h):
- **4 e-learning capsules:** Introduction to data visualization, Advanced data visualization, Emergence of new technologies, New waves in insurance

Part 1: Communication and visualization, Model governance (1h30)

Keywords: communication, new trends, data science ecosystem

Description:
On top of the sequential steps of the data science pipeline, we also have two important transversal elements that we need to have in mind during the whole project: communication and visualization, and model governance. A data science project aims at solving a business problem and, as such, must be supported and regularly confronted with the opinion of the people to whom this problem arises. Data science lives in a fast changing environment. Model governance, maintenance and follow-up is a key point too.

Content:
- Communication power in AI
- Interpretation of machine learning models
- Reasons and advantages of data visualization
- The process of data visualisation
- IT governance (version control, package version,…)
- Implementation best practices
- Access control and security
- Documentation

Part 2: Market trends driven by data science (1h30)

Keywords: business model, insurtech, new risks, digital insurance

Description:
As a conclusion, we are going to go beyond the application of data science models to insurance, and look at to what extend data science already affects the traditional insurance business. We are at the beginning of new and exciting perspectives. What are they and how can we make sure we do not miss the train?

Content:
- Data science practices in insurance: a benchmark
- Main market trends :
- Trends in insurance
- Evolution of risks
- Focus on product development and pricing
- Focus on claims management

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About the **Reacfin Academy**

Reacfin Academy is the business line of Reacfin dedicated to continuous professional education and training in Finance, Risk Management, Portfolio Management, Actuarial Science and Data Science.

www.reacfinacademy.com

About the **speakers**

Xavier MARECHAL

CEO Reacfin

Expert in Non-Life and Health insurance (pricing, product development, reserving and risk management). IA|BE qualified actuary.

Samuel MAHY

Head of Reacfin's Non-Life Center of Excellence, director at Reacfin
Expert in Non-Life and Health insurance (pricing, product development, reserving and risk management), reinsurance and Solvency II. IA|BE qualified actuary.

Julien ANTUNES MENDES

Manager in Reacfin's Life, Health and Pension Center of Excellence
IA|BE qualified actuary.

Jean Dessain

Associate Partner at Reacfin
Financial & strategic expert.

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