

Title

Using Explainable AI for Ratings of German Life Insurers

Speaker/Company

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Abstract

Explainable AI (XAI) systems are a necessity of our present era. Stakeholders must be able to trust AI in order to actively use it. In 2021 EIOPA's Consultative Expert Group on Digital Ethics in Insurance published six principles for the ethical use of trustworthy AI in the insurance sector. These principles include fairness & non-discrimination, transparency & explainability, data governance & record keeping and robustness & performance. We will focus on the principle of transparency & explainability. For this purpose, a use case of ratings of German life insurance companies will be considered.

Two different types of acceptance towards XAI have to be taken into account. On the one hand, technical acceptance and, on the other hand, user acceptance in the ratings of life insurance companies. Business figures of life insurance companies are often regarded as intransparent. This holds even true when national GAAP accounting (e. g. HGB) is supplemented by the Solvency II figures in the Solvency and Financial Condition Reports (SFCR).

Transparency is a basic prerequisite for a high level of explainability of the generated results by the XAI. There are, for example, mathematical sensitivity analyses (ratio of input data to result data, i.e. ex post explainability) or algorithms that already provide explainability by design (e. g. decision trees). They are used in our use case of the company rating. Especially, relatively small, structural networks are used which are given in equation form and represent expert knowledge. This guarantees explainability on the basis of a directed graph. Users therefore need less professional and technical expertise to understand. In our use case this means making the strengths and weaknesses of the insurer visible in a graph. Expert knowledge and AI methods are combined and used in such a "hybrid" model for the visualisation of the results, which operationalises the explainability also for the users of the company ratings. In this respect, the discussion of explainable AI methods in this context is a useful contribution to data ethics in insurance.

Biography

Mirko Kraft holds a Master's degree in mathematics of the University of Düsseldorf and was an academic staff member at the Chair for Management Accounting (Controlling) at the University of Muenster (2001 - 2006). His doctoral thesis discussed the cost transparency of performance measurement of insurance companies. After his time as research assistant, Mirko Kraft worked in the Risk Management Department of the German Insurance Association (GDV) in Berlin from 2006 to 2012. From 02/2008 to 06/2009 he was seconded to the Association's European Office in Brussels. In that position, he focused on the new European insurance supervisory regime Solvency II, in particular on own funds, group supervision, risk reporting, and third-country

equivalence. He also dealt with the supervision of financial conglomerates, the new European supervisory architecture and stress-tests.

Since 02/2012 Mirko Kraft is Professor for Insurance Management at the University of Applied Sciences and Arts in Coburg. In 2015 he became academic program director of the Insurance Management MBA and Insurance BA programs (part-time professional programs). His research areas are risk management and business administration of insurance companies. His research projects address, for example, group solvency calculations of insurance companies, telematics tariffs and artificial intelligence in insurance. In his teaching in Coburg and at other universities (e. g. in Berlin), and as a lecturer for industry courses, he continues focusing on cost and management accounting (controlling) and risk management of insurance companies. From 2019 to 2021 Mirko Kraft was Member of EIOPA's Consultative Expert Group on Digital Ethics in Insurance.

Dr Holger Bartel is founder and CEO of Fintech Startups. He holds a degree in economics and as a teacher. He got his PhD in multivariate time series analysis in the graduate program of Humboldt University and Free University of Berlin. He was a management consultant, worked for the German Insurance Association and was manager and appointed actuary for several group companies of German insurers. He still trains supervisory boards as a trainer for the German Insurance Academy. He also is a member of the German Actuarial Association and working as an expert on insurance topics. As founder of the rating agency RealRate (Santa Clara and Berlin), he has been elected one of the top insurtech CEOs. His focus areas are risk management, rating, and artificial intelligence. It is his goal to bring modern statistical methods to the fintech market and making them explainable.
