BIG DATA & ALGORITHMIC FINANCE

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CYBER INCIDENT REPORTS: EXTRAPOLATING SEVERITY USING NEURAL NETWORKS

Justin Kher, Olivier Lopez and Hugo Rapior.

Due to its emerging nature, cyber risk is a field in which very few data exist when it comes to calibrating models to anticipate the severity of such events. This makes the task of quantifying the cyber operational risk particularly challenging, and regarding the development of cyber insurance products, prices, reserves, and claim management policies are particularly difficult to evaluate. In this paper, we present a general methodology to process text data using neural networks, and how it can be used to determine the severity of a cyber incident when this information is missing. This methodology is illustrated on a public benchmark database. It can be used either to augment database, by adding some claim incidents to historical databases, from reported incident whose cost is unknown. It can also be used to quickly evaluate the severity of a cyber claim just after its occurrence. The methodology can be extended to other emerging risks, where structured data are partially missing, and where text can be used to add new information for quantitative methods.

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