

Prioritizing abnormal situations automatically in the context of fraudulent indemnization claims (with graph-of-relations analysis)

submitted by The Co-operators, Insurance and Financial Services

When processing an indemnization claim in the insurance industry, it is critical to determine quickly whether the claim is potentially fraudulent or not. This enables one to choose the actions needed in the investigation and to slow down the payment process in order to allow the investigation to take place. Since human judgments often display a lack of coherence, one would like to design automated prediction processes that will identify a preliminary group of situations involving fraud. The common experience of the insurance industry suggests that it is crucial to take into account networks of relationships among individuals, including their diverse roles, addresses, vehicles, etc., especially when fraudulent activities take place within these networks. Generally speaking, the investigative teams in the insurance industry cannot process all the leads they receive: there is an urgent need for more intelligence in the automated models selecting the leads submitted to investigators.

Given (a) the relations known to the insurance company, (b) the informations on the client, the insurance policy, and the claim details available at the time the claim is filed, (c) the annotations made by the investigating team before the filing of the claim (there may be up to 1000 annotations over a period of six years), the problem consists of designing a model that predicts whether a claim is fraudulent or not. Once the model has been proposed, its quality must be evaluated. In order to do so the company representatives could provide the team with a set of new claims and examine the claims prioritized by the model.

The company representatives are committed to supporting the team studying this problem, on the analytics side (including the data) as well as the business side (especially the assumptions made on a day-to-day basis).