

Bayesian Models of Car Lease Frauds

In this research, we focus on fraud modelling for car leases. The research objective is to investigate whether it is possible to improve the performance of such models by using additional knowledge derived from the area of fraud modelling for car loans. Two logistic regression models are developed for this purpose. The first model only uses the data on car leases, whereas the second model also incorporates the additional knowledge. The performance of the two models is compared ex post to assess the improvement achieved by the incorporation of this extra knowledge. To formally include the additional knowledge, the models are developed in the Bayesian framework, where the prior information is described with the prior probability distributions of the model parameters. The research is based on real-life data included in two large datasets provided by a bank that operates in Europe. The car lease dataset is used to build the models, whereas the car loan dataset is the source of the prior information, i.e. the prior distributions of some parameters (non-informative priors are adopted for other model parameters). The obtained results show to what extent such prior information can help improve the performance of fraud models for car leases. Generally, the research demonstrates how to enrich fraud models by using additional knowledge and Bayesian methods.