

P15

Crime Modeling in São Carlos Using Machine Learning Techniques

Thales de Lima Kobosighawa¹; Cibele Maria Russo²; Luis Gustavo Nonato³.

Brazil has been dealing with crime problems for a long time. Public security government agencies, along with the military police, are often interested in new ways to prevent the occurrence of any type of crime. Nowadays, much information about crime is available through police reports, as well as urban and infrastructure information from military police research. The aim of this study is to investigate associations between urban and crime information and, using machine learning techniques, to obtain a classification model able to predict the occurrence of a crime in a certain São Carlos city corner from infrastructure information. For this, feature selection, normalization techniques and handling imbalanced data techniques are applied to fit the data to the classification model and then, a Bayesian neural network model was proposed. Visualization of the importance of each urban information in crime prediction is derived graphically. In further studies, alternatives as other regression models can be considered for comparison of performance and results, as well as using time series techniques to identify patterns of crime on São Carlos city corners. In addition, the association between video surveillance cameras and the behavior of the amount of crime over the years are investigated.

Palavras-chave: Feature Selection; Normalization; Imbalanced Data; Classification Model; Bayesian Neural Network.

¹Instituto de Ciências Matemáticas e de Computação, Universidade de São Paulo, São Carlos, SP, Brasil – thales.kobosighawa@usp.br

²Departamento de Matemática Aplicada e Estatística, Instituto de Ciências Matemáticas e de Computação, Universidade de São Paulo, São Carlos, SP, Brasil – cibele@icmc.usp.br

³Departamento de Matemática Aplicada e Estatística, Instituto de Ciências Matemáticas e de Computação, Universidade de São Paulo, São Carlos, SP, Brasil – gnonato@icmc.usp.br