

Company Bankruptcy Prediction



Presented by
Artem Ramus

Introduction

Bankruptcy data from the Taiwan Economic Journal for the years 1999–2009

The data were collected from the Taiwan Economic Journal for the years 1999 to 2009. Company bankruptcy was defined based on the business regulations of the Taiwan Stock Exchange.

Source: Deron Liang and Chih-Fong Tsai, [deronliang '@' gmail.com](mailto:deronliang@gmail.com); [cftsai '@' mgt.ncu.edu.tw](mailto:cftsai@mgt.ncu.edu.tw), National Central University, Taiwan The data was obtained from UCI Machine Learning Repository:
<https://archive.ics.uci.edu/ml/datasets/Taiwanese+Bankruptcy+Prediction>

Relevant Papers: Liang, D., Lu, C.-C., Tsai, C.-F., and Shih, G.-A. (2016) Financial Ratios and Corporate Governance Indicators in Bankruptcy Prediction: A Comprehensive Study. European Journal of Operational Research, vol. 252, no. 2, pp. 561-572.
<https://www.sciencedirect.com/science/article/pii/S0377221716000412>

Data

- 95 features
- Target – bankrupt or not
- Target under-represented ~ 3%
- The data sets checked for duplicates and null values
- Outliers and skewness checked
- Constant, quasi-constant and highly-correlated features deleted

Methodology

- Cross-validation used
- Under-sampling technique didn't suit because of small bankrupt class quantity ~150
- Over-sampled with SMOTE chosen for treating the imbalanced data distribution
- Random forest classifier used
- Hyper parameters optimized with grid search

Performance of the Model

Bankruptcy was predicted with 93.8% ROC-AUC with random forest classifier using SMOTE technique for imbalanced data.

The end

Thank you for your attention!