

Explainable Machine Learning for Lending Default Classification with Dependent Features

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Complex Machine Learning (ML) models used to support classification decision-making, such as in peer-to-peer lending, often lack interpretable explanations. While Shapley values and the computationally efficient variant Kernel SHAP may be employed for this aim, the latter makes the assumption that the features are independent. We explain classifiers through a Kernel SHAP method able to handle dependent features in the context of credit risk management for peer-to-peer lending. We demonstrate the effectiveness of our method by considering linear and non-linear models with varying degrees of feature dependence, showing that our approach yields more accurate approximations of true Shapley values.

Keywords: Feature Dependence; Shapley Values; Machine Learning; Explainability.