FINTECH RISK MANAGEMENT

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Validation Workshop for Bankers and Insurers

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BDA and AI

INTESA SANPAOLO

Fintech Risk Management use cases (1/2)

Explainable AI in credit risk management

Interesting approach to **enrich the well-known Shapley values** method for a supervised learning model **leveraging an unsupervised method**

Scope

Model Design

Possible improvements

- **Comment** more on the **choice** on the **number** of **clusters** from the hierarchical clustering. Do so many clusters correspond to different configurations of the Shapley values?
- **Show** the **MST** colouring it with a scale of the predicted probabilities rather than the actual default values. This could further show how the **unsupervised method explains the supervised one** rather than showing whether the clustering corresponds to the binary response or not
- **Clarify** in what ways the proposed method based on MST network clustering is useful for the **explainability** of the scoring model
- **Clarify** in what ways the proposed method enhances or at least differs from other clustering methods in the **Shapley value** space
- **Compare** with this clustering approach "Hierarchical clustering in minimum spanning trees - Meichen Yu, Arjan Hillebrand, Prejaas Tewarie, Jil Meier, Bob van Dijk,Piet Van Mieghem, and Cornelis Jan Stam"
- **Compare** to a clustering (e.g. SOM 2D) on the **original data observation**
- Show **computational cost** in run and retraining phase

Fintech Risk Management use cases (2/2)

Network based scoring models to improve credit risk management in peer to peer lending platforms

Similarity networks may be **computed** according to **many different metrics** or **edge definition**. Using the **MST** derived from the standardized Euclidean distance between the features' vectors is an interesting one

Scope	Possible improvements
Model Design	▪ **Network measures** are probably **brand new information** with respect to the standard balance-sheet ratios. Could this be supported by some **statistical evidence**? What about the **coefficient** and **p-value** in the logistic regression? ▪ **Poor evidence** that the proposed methodology actually reaches an improvement over the non-network scoring model: what about some statistical comparison?
Business Focus	▪ In some contexts, it may be important to **analyze the results with a specific threshold/number of predicted positives** or setting a maximum on the false positive rate. In future applications, this could be considered in the performance evaluation ▪ Specify the **advance of the balance-sheet ratios** with respect to the **observation date** (in particular for borrowers that defaulted in a specific date e.g. 1 year before, 2 years before ..)