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Qeios

Peer Review

Review of: "Explaining the Unexplainable: A Systematic Review of Explainable AI in Finance"

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I do appreciate the idea of the paper to provide a systematic review of the rapidly growing number of research papers in this field. Moreover, the topic is of strong relevance due to the regulatory challenge of having the best predictive model but at the same time understanding it. I also really appreciate the amount of effort spent in collecting and reading all the papers.

Anyway, there are, in my opinion, also several major drawbacks, and I would rather consider this preprint as a starting point for further work:

Transparency:

- The criteria chosen for the systematic review are not clear to me as a reader. In addition, it should be referred to existing guidelines.
- The methodology used for chapter 4 is not transparent, e.g., how the network graphics and the word cloud are created (word clouds strongly change depending on the parameters chosen).

Too broad scope: The scope 'XAI in finance' is, in my opinion, chosen too broadly, as e.g., time series analysis such as stock price prediction or credit scoring are two completely different things. The authors should focus on one subject. Nor will it be helpful for readers to have both mixed up in one and the same paper.

Comprehensiveness: I am missing important aspects to be mentioned:

- The perspective of different stakeholders as a proposed process for transparency, auditability, and explainability of machine learning models in credit scoring (https://doi.org/10.1080/01605682.2021.1922098) as well as

 doi.org/10.32388/83FYUC

- Existing limits of explainability (cf. e.g., https://doi.org/10.1038/s42256-019-0048-x, https://doi.org/10.1007/978-3-031-04083-2_4).

Evaluation: The evaluations in chapter 4 should be strongly improved. I don't get any conclusion from this section. I am missing a clear research hypothesis to be answered by the evaluations in this section. Bar plots with frequencies between one and ten are missing reliability, particularly in combination with the missing transparency of the paper selection process. There is no need for a continuous colour scale across the categories in a bar plot.

Declarations

Potential competing interests: No potential competing interests to declare.