Review of: "Rules Extraction, Diagnoses and Prognosis of Diabetes and its Comorbidities using Deep Learning Analytics with Semantics on Big Data"

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Potential competing interests: No potential competing interests to declare.

The article presents an interesting and ambitious study on utilizing deep learning analytics with semantics on big data to address the challenges of diabetes diagnosis and prognosis with comorbidities. The work demonstrates significant potential in the field of healthcare informatics, but there are several aspects that could be improved to enhance the quality and impact of the research. Below are some constructive review comments:

Clarify the Research Objectives: The introduction should provide a clearer statement of the research objectives. Specifically, the article should explicitly state the research questions or hypotheses being addressed. This will help readers understand the specific aims and expected outcomes of the study.

Data Collection and Preprocessing: The article briefly mentions the use of big data, but it lacks details regarding the sources of data, the size of the dataset, and the data preprocessing steps. Providing this information is crucial for reproducibility and for evaluating the generalizability of the results.

Model Architecture and Parameters: More information about the deep learning model architecture and hyperparameters is required. The article should include a detailed description of the chosen model(s), the rationale for the selection, and the justification for the specific hyperparameter settings.

Evaluation Metrics: The evaluation metrics used to assess the performance of the proposed method should be clearly stated. It would be beneficial to discuss the choice of these metrics and how they relate to the objectives of the study.

Comparative Analysis: To establish the superiority of the proposed approach, it is essential to compare it with existing state-of-the-art methods. Including a comparative analysis with other relevant approaches will provide insights into the strengths and weaknesses of the proposed method.

Interpretability of Results: Given the importance of healthcare decision-making, the article should address the interpretability of the deep learning model. How are the extracted rules and diagnoses translated into actionable insights for clinicians? Discussing the interpretability of the model will increase the practical applicability of the proposed approach.

Address Data Imbalance: In the healthcare domain, imbalanced datasets are common. If the dataset suffers from class

imbalance (e.g., more healthy samples than diabetic samples), it is important to address how this issue is handled in the study. Balancing techniques or performance metrics that account for class imbalance should be explored.

Ethics and Privacy Concerns: Since the study involves patient data, the article should explicitly address the ethical considerations and privacy measures taken to ensure the protection of patient information and compliance with data protection regulations.

Future Work and Limitations: The article should discuss the limitations of the proposed method and potential directions for future work. Acknowledging the limitations will demonstrate a balanced perspective and guide future researchers in addressing these challenges.

Reproducibility: To facilitate replication and verification of the results, the authors should make the code, dataset, and model weights publicly available, or provide clear guidelines on how to access them.

The article has great potential and addresses a significant problem in the field of healthcare informatics. However, addressing the above-mentioned points will improve the clarity, rigor, and overall impact of the study.