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| Title | Automated Stroke Prediction Using Machine Learning: An Explainable and Exploratory Study with a Web Application for Early Intervention | | |
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| Abstract |  |
| Stroke is a dangerous medical disorder that occurs when blood flow to the brain is disrupted, resulting in neurological impairment. It is a big worldwide threat with serious health and economic implications. To solve this, researchers are developing automated stroke prediction algorithms, which would allow for early intervention and perhaps save lives. The number of people at risk for stroke is growing as the population ages, making precise and effective prediction systems increasingly critical. wo In a comparison examination with six well-known classifiers, the effectiveness of the proposed ML technique was explored in terms of metrics relating to both generalization capability and prediction accuracy. To give insight into the black-box machine learning models, we also studied two kinds of explainable techniques, namely SHAP and LIME, in this study. SHAP (Shapley Additive Explanations) and LIME (Local Interpretable Model-agnostic Explanations) are well-established and reliable approaches for explaining model decision-making, particularly in the medical industry. The findings of the experiment revealed that more complicated models outperformed simpler ones, with the top model obtaining almost 91% accuracy and the other models achieving 83-91% accuracy. The proposed framework, which includes global and local explainable methodologies, can aid in standardizing complicated models and gaining insight into their decision-making, which can enhance stroke care and treatment. | |