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| Title | Application of machine learning algorithms to predict the thyroid disease risk: an experimental comparative study. | | |
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| Abstract |  |
| Thyroid disease is the general concept for a medical problem that prevents one’s thyroid from producing enough hormones. Thyroid disease can affect everyone—men, women, children, adolescents, and the elderly. Thyroid disorders are detected by blood tests, which are notoriously difficult to interpret due to the enormous amount of data necessary to forecast results. For this reason, this study compares eleven machine learning algorithms to determine which one produces the best accuracy for predicting thyroid risk accurately. This study utilizes the Sick-euthyroid dataset, acquired from the University of California, Irvine’s machine learning repository, for this purpose. Since the target variable classes in this dataset are mostly one, the accuracy score does not accurately indicate the prediction outcome. Thus, the evaluation metric contains accuracy and recall ratings. Additionally, the F1-score produces a single value that balances the precision and recall when an uneven distribution class exists. Finally, the F1-score is utilized to evaluate the performance of the employed machine learning algorithms as it is one of the most effective output measurements for unbalanced classification problems. The experiment shows that the ANN Classifier with an F1-score of 0.957 outperforms the other nine algorithms in terms of accuracy. | |