

Title: Hypothyroid Disease Prediction Using Machine Learning & Ensemble Methods

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Abstract: Thyroid illness is spreading more and more nowadays and it has become the most common disease that can lead to various health disorders. The main reason behind this disease is thyroid hormone disorder which can lead to problems like Hypothyroidism or Hyperthyroidism. As the problem is often underestimated, it is necessary but challenging to predict it efficiently. To diagnose Hypothyroidism, the traditional way is to perform thyroid tests based on various elements to diagnose the behavior of thyroid hormone. Machine learning algorithms play an important in detecting and predicting diseases at their early stages. Many analyses and models can be developed using machine learning classifiers to find the most effective and accurate predictions. Our study aims to use different machine-learning classification techniques and develop a model to predict hypothyroidism. We also compare machine learning methods to determine which classifier is optimal for constructing a classification model. We also aim to use ensemble learning techniques for optimal results and amplify accuracies. We have achieved 97.23% with gradient boosting and the AdaBoost classifier and gradient boosting are the best-performing models combined with the Boosting method giving the highest accuracy of 97.57% and 97.51% respectively.

Keywords: Machine Learning , Machine Learning Methods , Disease Prediction , Ensemble Method , Hypothyroid Disease , Learning Algorithms

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