

Title: Prediction Hepatitis C Virus and Classifier Blood Donor and Disease using an Ensemble Approach in the Machine Learning Algorithm

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Abstract: Hepatitis C, caused by the hepatitis C virus, is a liver condition that can lead to severe complications if left untreated. The disease progresses through different stages, and while it is more easily treatable in the early stages, reaching the final stage without proper treatment makes recovery much harder, often resulting in high costs and significant pain. The current research emphasizes the importance of early detection as a simple and effective way to manage the condition. This study focuses on accurately predicting hepatitis C status, categorizing individuals as either blood donors or affected by the disease, using an ensemble machine learning approach. The research utilizes thirteen attributes and classifies the target into five categories: Blood Donor (including Blood Donor and Suspect Blood Donor) and Disease (encompassing Hepatitis, Fibrosis, and Cirrhosis). Several machine learning algorithms are employed, including Decision Tree, K-nearest neighbor, Random Forest, and a Stacking Classifier. Among these, the Stacking Classifier outperformed the others, achieving an accuracy of 99.4%, precision of 99.7%, recall of 97.7%, and an F1-score of 98.7%.

Key words: Machine learning algorithms , Liver diseases , Computer viruses , Pain , Stacking

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