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Application of Artificial Neural Networks with Firefly Algorithm for Heart Failure Prediction

Communication Info

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- (1) Machine Learning,
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Abstract

Heart failure is a serious illness that requires precise forecasting and prompt care [1]. This research examines the use of Artificial Neural Networks (ANN) for the early prediction of heart failure, focusing on optimizing ANN parameters through the Firefly Algorithm (FFA) [2]. Traditional artificial neural network models often face issues with local minima and demand substantial training time due to suboptimal parameter selections [3]. This study employs the FFA, a nature-inspired metaheuristic, to optimize the weight and bias parameters of the ANN, improving convergence speed and overall prediction accuracy with a dataset obtained from the Kaggle machine learning repository. Patient data, including vital signs and historical medical records, is used to train the model. The performance of the proposed study demonstrates the effectiveness of integrating the FFA with ANN for predicting heart failure diseases in patients.

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