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Evolutionary Radial Basis Function Network for Gestational Diabetes Data Analytics

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Abstract

The development of smart decision support systems (DSSs) that seek to simulate human behavioral aspects is a major challenge for computational intelligence (CI). Artificial neural network (ANN) approaches have the ability to solve complex decision-making problems that involve uncertainty and a large amount of information in a fast and reliable way. The application of this evolutionary CI technique to analyze a large amount of data is an important strategy to solve several problems in healthcare management. This paper proposes the modeling, performance evaluation, and comparison analysis of an ANN technique known as the radial basis function network (RBFNetwork) to identify possible cases of gestational diabetes that can lead to multiple risks for both the pregnant women and the fetus. This method achieved promising results with a precision of 0.785, F-Measure of 0.786, ROC area of 0.839, and Kappa statistic of 0.5092. These indicators show that this ANN-based approach is an excellent predictor for gestational diabetes mellitus. This research provides a comprehensive decision-making model capable of improving the care provided to women who are at a risk of developing gestational diabetes, which is the most

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