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# A Hybrid Feature Selection Algorithm with Neural Network for Software Fault Prediction

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**Abstract :** Software fault prediction identify potential faults in software modules during the development process. In this paper, we present a novel approach for software fault prediction by combining a feedforward neural network with particle swarm optimization (PSO). The PSO algorithm is employed as a feature selection technique to identify the most relevant metrics as inputs to the neural network. Which enhances the quality of feature selection and subsequently improves the performance of the neural network model. Through comprehensive experiments on software fault prediction datasets, the proposed hybrid approach achieves better results, outperforming traditional classification methods. The integration of PSO-based feature selection with the neural network enables the identification of critical metrics that provide more accurate fault prediction. Results shows the effectiveness of the proposed approach and its potential for reducing development costs and effort by detecting faults early in the software development lifecycle. Further research and validation on diverse datasets will help solidify the practical applicability of the new approach in real-world software engineering scenarios.

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