一种动态加权组合神经网络模型的软件测试方法

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摘　要： 软件可靠性评估性能直接影响软件测试的工作量，本文针对软件测试过程中故障检测和故障引进问题，提出了一种基于动态加权组合的神经网络软件测试方法，该方法考虑软件工程的多样性，利用神经网络方法构建动态加权组合模型，并结合故障引进过程完成故障检测和预测.通过两组真实的失效数据集（DS1 和 DS2）的试验，将所提方法与现有的软件可靠性增长模型（Software Reliability Growth Models，SRGMs）进行比较，结果显示考虑故障引进的动态加权组合神经网络模型拟合效果最优，表现出了更好地软件可靠性评估性能和模型通用性.

关键词： 软件可靠性；动态加权组合；故障引进；SRGMs

Software testing method based on dynamic weighted combined neural network model

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Abstract： Software reliability assessment performance directly affects the workload of software testing. This paper proposes a neural network software testing method based on dynamic weighted combination for fault detection and fault introduction in software testing process. This method considers the diversity of software engineering. The neural network method is used to construct the dynamic weighted combination model, and the fault detection process is combined with the fault introduction process. Through the test of two sets of real failure data sets (DS1 and DS2), the proposed method is compared with the existing Software Reliability Growth Models (SRGMs), and the results show that the dynamic weighted combined neural network considering the fault introduction is considered. The network model has the best fitting effect, showing better software reliability evaluation performance and model versatility.

Key words： Software reliability; dynamic weighted combination; fault introduction; SRGMs

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