Preface

Today's industry systems more and more depend on software which is sometimes very complex. Software complexity increases also with the risk factor of the environment where the whole system is deployed. From these reasons the requirements for software reliability cannot be missed out when designing such system. Software reliability differs from hardware reliability because it reflects the design perfection, rather than manufacturing perfection. Similar to hardware the reliability of software should be evaluated and measured, even it is not so simple task as it is in hardware because software is hard to touch. Many organizations and individuals developed methods for software reliability evaluation. In the existing software reliability models the failure check is performed after the coding and the implementation phase. Sometimes due to faulty designs requires reimplementation of the project. It leads to wastage of the resources and the time.

Our thesis methodology does analysis after designing phase of SDLC and if some error occurs, then updates the design. The thesis deals with the proposed software reliability model that performs its working in two phases. First phase of the model is completed before the coding after the design phase. In this phase the design is checked against the requirements. This phase uses the error back propagation of the neural network. The second phase of the model is placed after the implementation phase. This model uses the mean time failure and intensity to increase the reliability. In the first way, library software is built from the initial phase and complete methodology is applied on the software for high reliability. The software is build for the Vaish College of Engineering, Rohtak, Haryana. In the second way, the proposed neural network based methodology is analyzed on the datasets downloaded from internet. The dataset predicts the defects in the five modules of the NASA products. The NASA products under analysis are JM1, PC1, KM1, KC1, and KC2. The variables in this dataset are evaluated by using static measures i.e. prediction variables. The subsets in the dataset are prepared by classifying the set on the basis of size of module. The results show the effectiveness of the technique. In future the work can be extended to use other artificial intelligence techniques.