An Empirical Evaluation of Assorted Risk Management Models and Frameworks in Software Development

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ABSTRACT

Software risk management is one the key factors in software project management with the goal to improve quality as avoid vulnerabilities. The term defect refers to an imperfection that may arise because of reasons including programmers’ skills, lack of suitable testing strategies, and many others. When actual results are different from expected result or meeting wrong requirement, it is called defect and it forms the basis of risk escalation in a software project which is obviously not accepted in any type of deployment. Making a reliable software should be risk free from any vulnerability. Along with reliability another issue arises is software quality which is a factor with software risk management. The quality of software is to reduce the occurrence of risks and defects with the objective to produce an effectual value software which is key point of consideration. In this article, is underlined the present assorted risk management strategies proposed and projected by a number of researchers and academicians on the different parameters using benchmark datasets from renowned sources of research.

KEYWORDS


1. INTRODUCTION

Software defect prediction (Fenton & Neil, 1999) in software engineering used to predict the deformity in the software module. Numbers of defect are present during the development or after the delivery of software module (Sullivan & Chillarege, 1991). To obtain high quality software the prediction process is followed to predict to the defects. The need of obtaining high quality software is to gain customer loyalty. Few big organizations are using this prediction process as they release their software and software versions frequently and they have less time so instead of manually predicting the defects they use software deformity process.

Few techniques like decision tree, fuzzy logic, artificial neural network, Random Forest, HoneyBee Algorithm, and Bat Algorithm etc. are used for Software defect prediction. In proposed method, the artificial neural network is applied which produces more precise result then the existing on (Mittal, Sharma, Singh et al., 2019).

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2. PROMINENT APPROACHES FOR RISK AND DEFECTS MANAGEMENT IN SOFTWARE DEVELOPMENT

To produce high quality software the prediction of defects is very important. Following techniques are used for prediction:

**Machine Learning**

Software risk management and defects prediction is very popular in software engineering as it helps to reduce the cost by predicting the defect at early phases. During the development of software for organizations defect prediction uses different Machine Learning Techniques (MLT). To make software reliable, the software should be defect free (Challagulla, Bastani, Yen, & Paul, 2005). The main goal of machine learning (ML) is to build up the algorithm of practical value and algorithms should be well-organized. These are used to build defect prediction model. In ML we not only deal with time and space but also with amount of data, so it is a data driven technique. Data plays a vital role here; data helps to determine that given set of data is used as training or testing purpose. Quality of software significantly improves using MLT in SDP. For improving quality, a large number of different flavours of machine techniques exist but no particular technique is better than other in term of SDP. Figure 1 shows a learning diagram.

Figure is depicting the Learning Diagram whereby the training and prediction process is presented effectually so that the further classification can be done with higher degree of performance and accuracy.

**Advantages of Machine Learning**

- A general-purpose algorithm is generated for ML that produces more accurate result.
- A large amount of data has been examined by MLT.
- ML is the hope that it will provide insight into the general phenomenon of learning.
- MLT is a data-driven technique hence you know the effect of the parameter and how they are used.
- You will know how all of the parameters are used, their effects and even have insight into how it could be further parameterized to specialize it for a problem.

![Figure 1. Learning diagram](image-url)
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