CHAPTER – 6

CONCLUSION AND FUTURE WORK

6.1 CONCLUSION

The software requirements engineering provides the best opportunity to consider all the requirements of various stakeholders. Stakeholders are the individuals who have some influence over the requirements for that product. This research work is entirely focused on the software module development based on the stakeholder’s requirements. A requirements gathering is the major field of software module development. Initially, the stakeholder’s requirements were taken as an input and the processes such as, preprocessing, feature selection, classification, network formation, clustering and risk evaluation were performed on the RALIC dataset.

Preprocessing is an initial step in a software development application where, the data cleaning, data integration, data transformation and data reduction processes are performed. The hybrid approach of filter and wrapper methods was employed to select the reduced set of features.

Feature selection is typically used in machine learning systems for reducing the dimensionality and eliminating the noisy attribute datasets. It is also widely used in the area of software engineering for improving the accuracy and robustness of the software cost. The main intention of using this approach is to handle the large stakeholder’s requirements.

It involves the process of finding an optimum number and subset of features for providing the most accurate prediction result. Moreover, the proposed hybrid approach was compared with some of the existing feature selection algorithms, such as, FCBC and Relief. From this comparison, it has been proved that the proposed method provides the best results, when compared with the others. Hence, a Fuzzy Rule Based Classification (FRBC) algorithm was proposed to classify the required features. This method was compared with the existing algorithms such as, Naïve Bayesian (NB) and C4.5. Hence, the stakeholder’s network was formed to show the effective communication among the
stakeholders. A Bayesian network is generally represented as a Direct Acyclic Graph (DAG) with nodes and edges.

The nodes are symbolized for uncertain variables and the edges for directed relationships between the variables. Additionally, the Stake Requirement Clustering Algorithm (SRCA) was proposed to decompose the common characteristics of collected requirements. The Jaccard similarity measure is used in this system to for determining the similarities between the stakeholders. The SRCA was compared with some of the existing clustering algorithms, namely, K-Means and MDBC. From that, it was observed that the proposed SRCA provides the best clustering results. After developing the complete software module, the risks present in the product were analyzed and mitigated by a risk management scheme.

Here, the module prediction method was proposed for mitigating and managing the risks after developing the product. Risk minimization requires the understanding of software assurance in the context of software engineering. Risk management is the process of identifying and mitigating the true risks of a software product. The initial step of the risk evaluation is risk identification that is responsible for the recognition of potential losses and their causes. The purpose of risk identification is to discover all risk factors that could lead to project failure. These factors were connected with the technology used in the software module development.

Risk mitigation is an attempt to avoid or prevent the consequences of risk materialization. The level of the risk is evaluated by calculating the scalability and reliability values for the proposed system. The performance of the implemented method has been analyzed and evaluated in terms of precision, recall, accuracy, scalability and reliability measures. When compared with the existing methods, the implemented method provided the best results.

6.2 FUTURE WORK

In future, the requirement prediction validation module can be developed by implementing the software testing analysis model. The accuracy of the proposed module prediction will be increased by using a module dependency analysis. Moreover, the prioritization technique will be developed for implementing the software modules.