Early Stage Software Reliability Modeling using Requirements and Object-Oriented Design Metrics: Fuzzy Logic Perspective

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Abstract

In the current scenario as the influence of information technology has been rising day by day, the industry is facing the pressure of developing software with higher level of reliability. Generally it is an accepted fact that the roots of unreliability lies in ill defined requirements and design documents. With this spirit, researcher has proposed and implemented a reliability prediction model through fuzzy inference system that utilizes early stage product based measures from requirements and object-oriented design stages. The study starts with the review findings those have been used as foundation for proposing a reliability quantification framework. Subsequently this framework has implemented in the form of reliability prediction model that predicts reliability at the requirements as well as design level through its output variable. The model has been validated as well as quantitatively compared with two existing reliability models. The obtained results are quite encouraging and supports that the proposed framework and reliability prediction model are better. Consideration of requirements phase along with the object-oriented design provides this paper an edge over other similar studies
those are based on only design phase. Because ignoring requirements deficiencies and only concentrating on design constructs will not help in developing reliable software.

References

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Index Terms

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Keywords