

VALUE BASED INTELLIGENT REQUIREMENT PRIORITIZATION (VIRP): EXPERT DRIVEN FUZZY LOGIC BASED PRIORITIZATION TECHNIQUE

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ABSTRACT. *Requirement Prioritization is a very critical but often neglected area of requirement engineering. Experience has shown that without proper prioritization of requirements presented by various stakeholders, the end product usually fails to meet its objectives optimally. In fact in many instances, the product is considered a failure because it fails to meet its core objectives. Several requirement prioritization techniques have been presented by various researchers over the past years. Working with these techniques has exposed several limitations when applied in software projects. In this paper, we have presented a novel multi-level value based intelligent requirement prioritization technique using fuzzy logic. We have introduced and applied the concept of requirement value to prioritize requirements. We have performed extensive experimentation using our proposed technique along with existing techniques. Results have shown that our technique has achieved superior prioritization results and consistency. The experiments have also shown that proposed technique is capable of delivering impressive prioritization under various circumstances.*

Keywords: Requirement engineering, Requirements prioritization, Fuzzy systems, Intelligent requirements prioritization

1. Introduction. Software Engineering is one of the youngest engineering domains which emerged as recently as somewhere in the middle of 1980 as an accepted engineering discipline. The aim of SE is to create software products, services or their artifacts in order to meet the requirements posed by stakeholders while meeting quality constraints imposed on them. In order to meet both these objectives, any software development derives its purpose and meaning from the requirements posed by various stakeholders. In this context, better elicitation, modeling and analysis of requirements plays a very critical role towards development of a quality software. Requirement Engineering is an established domain of knowledge within software engineering which establishes practices and principles for effective requirement elicitation, modeling, specification, documentation, etc. One very important but often neglected practice of software requirement engineering is requirement prioritization. Requirement prioritization is the process of establishing worth and value of various requirements posed by multiple stakeholders based on certain established criteria of their utility for the ultimate software product. Several requirement prioritization techniques have been presented by authors. These techniques are both quantitative and qualitative in their nature. Some well known requirement prioritization techniques include Analytical Hierarchy Process (AHP), Cumulative Voting, Numerical Assignment, Ranking, Theory W, Requirement Triage and Wieger's Method, etc. And there are several other techniques which we shall discuss in this paper.