عنوان مقاله:

Design Software Failure Mode and Effect Analysis using Fuzzy TOPSIS Based on Fuzzy Entropy

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خلاصه مقاله:

One of the key pillars of any operating system is its proper software performance. Software failure can have dangerous effects and consequences and can lead to adverse and undesirable events in the design or use phases. The goal of this study is to identify and evaluate the most significant software risks based on the FMEA indices with respect to reduce the risk level by means of experts' opinions. To this end, TOPSIS as one of the most applicable methods of prioritizing and ordering the significance of events has been used. Since uncertainty in the data is inevitable, the entropy principle has been applied with the help of fuzzy theory to overcome this problem to weigh the specified indices.The applicability and effectiveness of the proposed approach is validated through a real case study risk analysis of an Air/Space software system. The results show that the proposed approach is valid and can provide valuable and effective information in assisting risk management decision making of our software system that is in the early stages of software life cycle. After obtaining the events and assessing their risk using the existing method, finally, suggestions are given to reduce the risk of the event with a higher risk rating.

کلمات کلیدی:

Expert Opinion, Fuzzy TOPSIS, Fuzzy Entropy, Risk Assessment, Software FMEA, Requirement analysis

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