

# 改进犹豫模糊集在信息安全风险评估上的应用

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摘要: 为有效解决信息安全风险评估时未知信息众多、专家会对评估分值犹豫的问题, 提出了使用改进犹豫模糊集对信息安全进行风险评估的方法. 方法思路是将心理预期与实际估计的数学关系转化成决策矩阵, 计算各底层指标权重, 利用底层指标和专家权重对决策矩阵加权, 最后用分数函数计算出评估结果. 采用该方法, 解决了信息安全风险评估过程中方案和专家决策的模糊性不能完全反映的问题, 同时使信息安全风险评估更符合客观实际. 实例分析证明, 该算法合理有效.

关键词: 信息安全; 风险评估; 犹豫模糊集; 心理预期; 决策矩阵

## The Application of Improved Hesitant Fuzzy set in Information Security Risk Assessment

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Abstract: To deal with the problem that much information is unknown and the experts will hesitate about the point value of evaluation, When information security risks are assessed, improved hesitant fuzzy set for information security risk assessment is proposed. The method's idea is transforming the actual estimation into the decision matrix of the fuzzy set and calculating the weight of each underlying index. Then, the decision matrix is weighted by the weight of underlying index and expert. The result is calculated using fractional function. This method is used to solve the problem that the fuzzy nature of the scheme and expert's decision-making in the information security risk assessment process which cannot be fully reflected and make the information security risk assessment more objective and practical. The example analysis shows that the proposed algorithm is Reasonable and effective.

Key words: information security; risk assessment; hesitant fuzzy set; expectations; decision matrix

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