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FDI in Multivariate Process with Naive Bayesian Network in the Space of Discriminant Factors

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Abstract
The Naive Bayesian Network (NBN) classifier is an optimal classifier in the case of independent descriptors or variables. The presence of dependencies between variables generally reduce his efficiency. In this article, we are proposing a new classification method named Naive Bayesian Network in the Space of Discriminants Factors (NBNSDF) which is based on the use of the NBN in the space of discriminants factors issue from a discriminant analysis. The discriminants factors are not correlated letting very efficient the utilisation of the NBN. We found on simulated data that the NBNSDF method better detects and isolates faults in multivariate processes than the NBN.

Keywords: Naive Bayesian Network, Discriminant analysis, Fault Detection and Isolation.

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Extending Health Considerations in Generation/Transmission Power System to Include Uncertainty Using Fuzzy Data

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Abstract
The basic objective of a modern power system is to satisfy the system load requirements as economically as possible and with reasonable assurance of continuity and quality. The currently available reliability assessment techniques can be divided into two distinct categories of deterministic and probabilistic techniques. The reliability parameters such as failure and repair rates of components used in the probabilistic models, there is considerable data uncertainty that exists in these parameters. Forced outage rate, is affected by two uncertain factors mainly, in case of two state models, such as failure rate and repair rate, it is appropriate to apply fuzzy mathematics to solve this problem. The á-cut of fuzzy mathematics model is used by considering the membership grade in a fuzzy set. The coupling between the presumption level and the confidence interval will be a popular way to define the concept of uncertain data of fuzzy numbers. The concept of fuzzy number (FN) has led to the development of fuzzy mathematics, has the capability of dealing with uncertain data in normal calculation. In this paper a framework to evaluate health analysis of the generation/transmission system by incorporating the fuzzy approach is suggested. The mathematical models of different parameters based on fuzzy concept are developed. The proposed methodology is tested on composite power system, to demonstrate the effect contingencies and uncertainties on power System health indices. The analytical results can serve as operating guide to the system operator.

Keywords: Power System, Uncertainty, Reliability, Fuzzy Data, Health.

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Modern Procedures for Evaluating MEMS Reliability

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Abstract
Two procedures were proposed for evaluating MEMS reliability: i) To evaluate the reliability of a Virtual Prototype, i.e simulating the dependence of the reliability level on device structure and process parameters; ii) To shorten the test time by using accelerated testing, which means to test the components at higher values of stress as those encountered in normal functioning, in the aim to shorten the time period necessary to obtain significant results. These two solutions are complementary, because the estimations made on a Virtual Prototype has to be verified by the accelerated testing.

Keywords: reliability, MEMS, virtual prototyping, accelerated testing.

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IJS-HRA - A Method for Human Reliability Analysis

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Abstract
The Human Reliability Analysis (HRA) is a systematic framework, which includes the process of evaluation of human performance and associated impacts on structures, systems and components for a complex facility. The objective of the paper is to present the IJS-HRA method and the results of an example study. IJS-HRA is a method, which is a method for evaluation of the human error probabilities of human actions within the probabilistic safety assessment of the nuclear power plants. It is developed based on integration of several important features of previously developed methods. The resulted human error probabilities, which are calculated with application of the method, are used in the example probabilistic safety assessment. A part of the obtained results are presented, which show that the contribution of human factor is still an important contributor to risk in spite of a wide automation, which took place in recent decades. In addition, the most important human failure events are identified, which are candidates for simulator training, which will consequently reduce their human error probability and contribute to improved safety.

Keywords: Human Reliability Analysis, Risk, Safety, Nuclear.

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How the Paradigm of Management Control enables managers to find new directions in Quality Management

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Abstract
The quality management discipline is strongly rooted in business practice. This link with practice has resulted in quality models (like the Business Excellence Models) that appeal to managers and, as a result, have been used widely. Since these quality models make common sense, most people will not question their benefits for improving organisations. However, the quality management discipline has not developed any theories about how different organisational contexts may influence the way in which quality models are used. Recent research has shown that a universalistic approach is inappropriate because quality management is in fact context dependent. The management control discipline has acknowledged the importance of the business context already more than a decade ago, and can provide important insights for quality management. In this article we will discuss these insights and argue why they can benefit quality managers.

Keywords: quality management, management control, paradigm.

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