Guest Editorial

ESREL 2002

This issue has some selected papers from the ones that were presented at the ESREL 2002 Conference, which was organized in France. The papers included here cover different topics and they are revised and extended versions of the Conference papers.

This conference, which is the yearly Conference of the European Safety and Reliability Association (ESRA), was organized to coincide with the French conference from the series lambda-miu and was held in Lyon.

The paper on ‘artificial neural network for violation analysis’ concentrates on human reliability analysis, dealing with the analysis of barrier removal on human–machine systems. Three algorithms are presented to classify and predict barrier removal in terms of different criteria.

In ‘design of intelligent distributed control systems: a dependability point of view’ focus is given to different aspects of fieldbus design, concentrating on the communication function, which is critical in intelligent distributed control systems and assessing dependability at the different design stages.

In ‘critical scenarios derivation methodology for mechatronic systems’ a method based in Petri Nets is proposed to deal with safety in the design of mechatronic systems. The model takes into account normal behavior, failures and reconfiguration mechanisms.

The paper on ‘classes of imperfect repair models based on reduction of failure intensity or virtual age’ proposes two classes of imperfect repair models. In one class the repair effect is expressed by a reduction of failure intensity, while in the other it is reflected on a reduction of the system virtual age.

The paper ‘detection of equipment aging and determination of the efficiency of a corrective measure’ a method is proposed to identify when the ageing process starts in equipment that may be prone to early aging.

Methods to determine pipe leak and rupture frequencies are discussed in ‘comparison of approaches for estimating pipe rupture frequencies for risk informed in service inspections’. One is based on probabilistic fracture mechanics while other is based on estimating frequencies from a large database.

The ‘PHI2 method: a way to compute time-variant reliability’ deals with a method that solves time variant problems using the classical time invariant tools of structural reliability.

In ‘multiobjective genetic algorithm approach to the optimization of the technical specifications of a nuclear safety system’ an approach is proposed to couple genetic algorithms with Monte Carlo simulation for multiobjective optimization of technical specifications of nuclear safety systems. The method accounts for the uncertainty in model parameters and for the costs of alternative systems.

We hope that this selection of papers gives an idea of the diversity of topics covered in the Conference.

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