Volume 10, Number 1

ROLE OF ANIMATED HUMAN MACHINE INTERFACE IN NUCLEAR POWER PLANT SIMULATION

Bindu, S.; Jayanthi, T.; SatyaMurty, S. A. V.; Swaminathan, P. & Raj, B.
Indira Gandhi Centre for Atomic Research, Kalpakkam - 603 102, India
E-Mail: bindu@igcar.gov.in

Abstract
The recent advances in Computer Science and Technology have revolutionized the way graphical user interfaces are used towards Human Machine Interface (HMI). The graphical user interface is so powerful, that the knowledge of a process or system can be transferred to plant personnel accurately and effectively within a short period of time. The techniques of animation can enhance the illusion of direct manipulation that many human computer interfaces strive to represent. This paper describes the role of human machine interface using animated information in Full Scope Replica type training simulator of Prototype Fast Breeder Reactor (PFBR). This paper covers general description of PFBR, the Full Scope Replica Simulator, the concept of simulation of plant dynamics, development of the animated core temperature distribution diagram and process flow diagram followed by its features. Also it covers how animated core temperature distribution and dynamic process flow diagrams are advantageous for operator training. 10 refs.

USE OF SIMULATION IN A FACTORY FOR BUSINESS CONTINUITY PLANNING

Tan, Y. & Takakuwa, S.
Tokyo University of Science, School of Management, Saitama Prefecture, 346-8512, Japan
E-Mail: tan@ms.kuki.tus.ac.jp

Abstract
Companies can suffer significant losses as a result of unanticipated business disruptions caused by natural disasters or outbreaks of disease. In order to restore the organization's critical functions and minimize the impacts of a disruption, it is important to establish business continuity planning and recovery planning. First the risks in the external environment surrounding the companies and business continuity planning were described. Then, how the computer-based simulation technique could be utilized to establish the business continuity planning was examined under a pandemic environment. In this study, an approach of examining the operation rates and the plant-utilization rates was proposed for a factory, by applying simulation. The proposed approach was applied to a real manufacturer especially under a pandemic flu environment in order to confirm its effectiveness. 14 refs.

DISK ARRAY SIMULATION MODEL DEVELOPMENT

Vickovic, L.; Celar, S. & Mudnic, E.
University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, Split, Croatia
E-Mail: linda.vickovic@cern.hr

Abstract
This paper presents a detailed development process of dynamic, discrete event simulation model for disk array. It combines a hierarchical decomposition with the "bottom up" approach. This way, at the beginning, the focus is set on the elementary storage component – a single disk drive. Once when functional simulation model for disk drive has been achieved it is used as a basic storage element for disk array model development. Further on, it is explored how to simulate different interfaces inside disk array, toward underlying disks. The difference in throughput produced by developed model and measurements is from 1.5-3.16 % for writing and from 2.5-2.8 % for reading, depending on interface type. However, such results are limited on workload imposed by the requirements of the ALICE transient storage system, or more precisely, sequential storing and reading of large data files. 23 refs.

UNCERTAINTY, DUALISM AND INVERSE REACHABLE SETS

Raczynski, S.
Universidad Panamericana, Escuela de Ingeniería, 03920 Mexico DF, Mexico
E-Mail: stanracz@stanr.com

Abstract
A specification in the language of the theory of categories is given for dynamic models with uncertainty. For continuous models the uncertainty is treated by means of differential inclusions. The reversibility and the inverse problem are considered. It is shown that models with uncertainty are not reversible (cannot be solved simply reversing the time). The inverse problem for such models is solved using the concept of dualism in the theory of categories. The categorical language is much more abstract and the categorical specification may work in continuous case as well in the discrete event simulation. 24 refs.