

PERFORMANCE ANALYSIS OF FLOW TIME BASED DISPATCHING RULES WITH UNRELIABLE MACHINES

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Abstract

This research paper focuses on the simulation-based comparative study of several new dispatching rules with the existing ones for the minimisation of flow time based performance measures such as mean flow time, maximum flow time and variance of flow time. The authors have proposed five new flow time based dispatching rules. The best of existing rules such as PT+PW, AT, AT-RPT, FDD and the standard benchmark rules such as SPT, FIFO are considered for the comparative study with the new proposed rules. Simulation studies are conducted under varying shop utilisation, breakdown and mean time to repair to rank performance of the considered rules. Shop floor machines are subjected to failures during this study. 17 refs.

Key Words: *Real Time Scheduling, Mean Time Between Failure, Mean Time To Repair, Dispatching Rules*

OPTIMISATION OF CUTTING PARAMETERS IN HIGH SPEED MILLING PROCESS BY GA

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Abstract

Due to the widespread use of highly automated machine tools in the industry, manufacturing requires reliable models and methods for the prediction and optimisation of output performance of machining processes. The paper proposes a new optimisation technique based on genetic algorithms for the determination of the cutting parameters in high speed machining (HSM) operations of ball-end milling process. In metal cutting processes, cutting conditions have an influence on reducing the production cost and time and deciding the quality of a final product. This paper presents a new methodology for optimisation of cutting conditions with genetic algorithms (GA). Experimental results show that the proposed genetic algorithm-based procedure for solving the optimisation problem is both effective and efficient, and can be integrated into an intelligent manufacturing system for solving complex machining optimisation problems. 11 refs.

Key Words: *Manufacturing, Cutting Parameters, Modelling, Optimisation, Genetic Algorithm*

OPTIMUM NUMBER OF PARKING SPACES IN A HOSPITAL: A SIMULATION ANALYSIS

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Abstract

Inadequacy of parking spaces has become one of the central issues in health services. In a hospital context, determination of the optimum number of parking spaces is important for a hospital, as the majority of customers are patients. This paper uses an animated simulation model to determine the optimum level of parking spaces for a hospital. This study uses the whole parking area as the experiment unit whereas many other studies in this nature have used selected samples of the parking areas. Modelling is carried out with the use of discrete event simulation package Arena. Sensitivity analysis and analysis of alternatives suggest several strategies to improve parking availability without increasing the existing space capacity. 11 refs.

Key Words: *Off-street Parking, Discrete Event Simulation, Animation, Parking Fee*

OPTIMISATION BASED-ON GUI USING LEAST SQUARE METHOD FOR AUTONOMOUS THREADED FASTENINGS

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Abstract

Threaded fastenings are a common assembly method, accounting for over a quarter of all assembly operations. These operations are to permit easy disassembly for maintenance, repair, relocation and recycling. Therefore, it is classified as especially popular over a common joining process. Screw insertions are typically carried out manually as it is a difficult operation to automate. There is very little published research on automating threaded fastenings, and most research on automated assembly focus on the peg-in-hole assembly problem. The creating interactive simulations and graphical user interfaces became to necessary helping and support in order to an aid in visualizing. This paper presents the Graphical User Interfaces (GUIs) to accommodate and support useful for the assembly line industries. An interactive intelligent automated monitoring based-on parameter estimation using Least Square Method has applied for two unknown parameter during a self-tapping screw insertion has presented. Experimental results have presented the estimation procedure. 18 refs.

Key Words: *Threaded Fastening, Least Square Method, Parameter Estimation, Screw Insertion, GUI in Matlab*