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Expert systems of adaptive fuzzy reasoning-based implementation for velocity estimation of servo motor system

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Adaptive fuzzy Petri nets (AFPNs) model is established for velocity estimation from position values of servo motor. A graphical fuzzy model that uses rules base system to effectively process the uncertainties variables is built. Modules that represent distinct types of fuzzy rules are created and defined. An AFPN module for velocity estimation is constructed according to the structure, relations, rules, certainty factors and weights of the adaptive fuzzy model for servo motor system. The servo motor system is analysed, and definitions are prepared for the AFPN model and the input data. An AFPN model is created and trained with input data on weight w(pi). Input places are represented the membership function values the initial values of the input places are entered (position error θe velocity error (ωe), and the output value of (p22) represented the velocity estimation . The system can perform fuzzy reasoning automatically to evaluate the degree of truth α(pi)of the proposition. The presented study demonstrates that the proposed model is able to achieve the purpose of reasoning, and computing of the velocity estimation υe value. An AFPN structure has been used rather than FPNs formalism to improve the efficiency of fuzzy reasoning. The effectiveness of the proposed method is verified by both model simulations and experimental results.

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Soft computing approach for software cumulative failure prediction

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The main apparatus of soft computing paradigm are Artificial Neural Network, Fuzzy Logic, Swarm Intelligence and evolutionary computation. In this paper we introduce a new computing archetype present with soft computing tools and techniques to predict the software reliability concern with software developers and engineers in changing environment consideration. To construct a successful product we must have attributes including Reliability, performance, capability, functionality, usability, maintainability and documentation. Reliability is essentially being able to deliver usability of services while assuring the constraints of the system and is considered a part of quality assurance. The software reliability analysis is trait of software quality analysis. The objective of software reliability is also a very pertinent matter as per the customer satisfaction. To ensure models are developed to forecast the behaviour of software reliability. In order to achieve software reliability there are many reliability growth models are very complex and standard estimation procedures such as MLE (Maximum Likelihood Estimation) is difficult to estimate more realistic and useful so that the stochastic models over parametric models are very helpful for predicting. In this paper we investigate the potential benefits of using non-parametric modeling (NPM) methods to fit SRGMs (Software Reliability Growth Models) through soft computing techniques. The final numerically based example on real software failure data will be presented to illustrate the intelligence techniques developed and comparative work with some parametric SRGMs for software reliability prediction.

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