

Inventory control model based on multi-attribute material classification: An integrated grey-rough set and probabilistic neural network approach

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ABSTRACT

Efficient and reasonable inventory control can help enterprises improve inventory management efficiency, reduce inventory cost, and ensure the full utilization of resources. Considering that there are many attributes of material, different materials have different effects on enterprises. A multi-attribute material classification model based on grey rough set and probabilistic neural network is proposed, and an inventory control strategy model based on material classification is constructed according to the characteristics of different types of material. Based on the construction of the relevant models, taking the inventory materials of sample Enterprise A as an example, the grey rough set algorithm is used to reduce the redundant material attributes, and the sample data of normalized reduction attributes are used to classify and discriminate the materials by probabilistic neural network. The results are simulated by MATLAB to obtain the efficient and reasonable classification of the materials of enterprises. Finally, with the sample data of different types of representative materials, a matching model of inventory control strategy based on material classification is applied in practice, and the applicability and feasibility of the model are illustrated, providing a scientific basis for enterprises to make decisions on material management and inventory control.

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Model nadzora inventarja, ki temelji na klasifikaciji materiala z več atributi: Integriran pristop z uporabo sive grobe množice in verjetnostne nevronske mreže

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POVZETEK

Učinkovit in razumen nadzor zalog lahko podjetjem pomaga izboljšati učinkovitost upravljanja zalog, zmanjšati stroške zalog in zagotoviti polno izrabo virov. Glede na to, da obstaja veliko lastnosti materiala, imajo različni materiali različne učinke na podjetja. Predlagan je model klasifikacije materiala z več atributi, ki temelji na sivi grobi množici in verjetnostni nevronske mreži, model strategije nadzora inventarja, ki temelji na klasifikaciji materiala, pa je zasnovan glede na značilnosti različnih vrst materiala. Na podlagi izdelave ustreznih modelov, če vzamemo za primer materiale inventarja vzorčnega podjetja A, se algoritem sive grobe množice uporablja za zmanjšanje odvečnih atributov materiala, vzorčni podatki normaliziranih atributov zmanjšanja pa se uporabljajo za klasifikacijo in razlikovanje materiala z verjetnostno nevronske mreže. MATLAB simulira rezultate za učinkovito in razumno klasifikacijo materialov podjetij. Nazadnje se z vzorčnimi podatki različnih vrst reprezentativnih materialov v praksi uporabi ujemajoč model strategije nadzora zalog, ki temelji na klasifikaciji materialov. Ponazorita se uporabnost in izvedljivost modela, ki podjetjem zagotavlja znanstveno podlago za odločanje o upravljanju materiala in nadzoru zalog.

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PODATKI O ČLANKU

Ključne besede:

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