Representation and Application of Jacket Knowledge Based on Domain Ontology

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Abstract

This paper takes jacket as an example, constructs a clothing knowledge model based on domain ontology, and explores ways to represent and reuse clothing knowledge in the context of the Internet economy. In this paper, jacket knowledge is sorted out based on the dimension of life week of clothing products, and the jacket knowledge framework is subdivided under the guidance of the modular design concept, laying a foundation for further application of the framework. The research shows that combining ontology modeling technology and knowledge representation, jacket domain ontology can be constructed to realize the classification of jacket design knowledge. This paper also further discusses the application prospect of jacket knowledge framework, which can play a guiding role in the customization of the jacket and modular design of the jacket, improve the reuse rate of jacket knowledge, and provide a feasible application mode for garment knowledge management.

Keywords: Jacket; Product Life Cycle; Knowledge Classification; Knowledge Framework

1   Introduction

With the improvement of the society's informatization level, finding ways to systematically store the knowledge accumulated in the design and production of the enterprise in the intangible assets of the enterprise is key for the transition of all garment companies from personnel management to knowledge management. An important way for large-scale mechanized collaborative production is turning to consumer demand-oriented rapid response production. Therefore, the introduction of a knowledge management model suitable for the apparel field has transformative significance for the transformation and upgrading of enterprises.

In terms of domain ontology, Feng Quanhua [1] put forward a framework for the organization and application of knowledge in the life cycle of complex products, researched the modeling method of ontology knowledge in the life cycle of complex products, and accordingly introduced knowledge bases and expert libraries to develop knowledge management tools. Wang Hong and Li Han [2] proposed a relation extraction model combining attention mechanism and bidirectional

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gated loop unit (BiGRU) to train and optimize the model in order to provide automatic acquisition of ontology relationships in the field of civil aviation emergencies. The new method support of Li Zheng and Li Bin [3] proposed a domain ontology construction method based on association rules and K-means, which can identify the relationship between concepts and provide corresponding support for the semantic query of Web services. Furthermore, Hala Alrumaih et al. [4] present a requirement classification technique that can be used to share and describe different classifications, and construct domain ontology. The proposed ontology is built using a systematic method based on Methodology and it is implemented using Protégé. The proposed ontology may increase the quality of software requirements specification documents and facilitate communication between requirements engineers.

In the study of clothing ontology, Li Zhimin [5] constructed a knowledge framework of virtual clothing enterprise with knowledge resource, organization and application layer as the main body. Following this, the study carried out the construction of clothing virtual enterprise ontology. Song Xueying [6] analyzed the relationship between the design process of the bra model cup and the knowledge management process, and proposed an overall framework model for knowledge management of the design of the bra model cup based on process fusion. Zhao Meimei [7, 8] combined multi-dimensional and hierarchical classification methods to build a case-based knowledge management system for professional wear design. Moreover, Zhou Zhiya [9] proposed a method of integrating ontology and multi-dimensional ideas into the classification of sportswear knowledge, and constructed an ontology model in the field of sportswear. Zhou Wencan [10] used information extraction technology and key information judgment rules to construct the knowledge domain ontology of clothing plate making. Relying on the Auto Pattern plate making system developed by the Shaanxi Apparel Engineering Technology Research Center of Xi'an University of Technology, automatic plate making based on suit plate making sentences was realized. Aisha N et al. [11] organized a data set containing 5,000 questions and answers on the top ten brands in the field of fashion and developed a clothing brand ontology on this basis. They built a user query system based on the fashion brand ontology to realize real-time communication with users. Following this, Usip, P.U et al. [12] presents a framework for recommending apparels to users based on their preferences. This framework is based on the input received from users. In order to realize this task, fashion ontology was created to provide domain knowledge required for reasoning and recommendation of users' garments.

At present, there are few domain ontology researches on jacket products. Based on the dimension of product life cycle, this article sorts and classifies the knowledge on jacket. By dividing jacket product life cycle into different modules, a knowledge classification framework is established and abstracted. On this basis, further research is carried out.

2 Establishment of Jacket Knowledge Framework based on Domain Ontology

2.1 Analysis of the Characteristics of Jacket Knowledge

Compared to other tops, the jacket is simple in shape and classic in style and suitable for various fabrics. In addition to tightening the cuffs and hem, the style and structure of the other parts of the jacket are very free and comfortable to wear, and it is used in daily life and industrial