

支持产品概念创新的国外专利知识获取方法 Method of Foreign Patent Knowledge Acquisition to Support Product Conceptual Innovation Design

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摘要: 提出了一种设计目标导向的专利文献分类方法, 分析了各类专利在产品设计中的作用, 建立了由创新层次知识、原理关联知识、专利原理方案知识和语言知识组成的产品创新设计知识体系, 描述了基于框架结构和概念图的专利原理方案表示模型, 进而研究了机械产品专利原理方案知识获取方法, 采用自然语言理解从专利文献中抽取产品作用结构概念图, 利用原理关联知识提炼专利产品的功能效应信息。最后结合钻头产品创新实例, 说明了该方法可充分利用专利知识, 提高产品概念创新的有效性。 A method of patent document classification guided by design objective was proposed. And then the support of different types of patents on product innovation was analyzed. The knowledge system for product innovation, comprised of innovation level knowledge, association knowledge, principle knowledge and patent language knowledge, was established. Based on frame structure and concept graph the representation model of patent principle knowledge was described. Furthermore, a method for patent principle knowledge acquisition of mechanical product was studied. Nature language understanding was utilized to extract patent working-structure concept graph from patent document. Domain association knowledge was employed to distill the functional effect of principle knowledge. Finally, with the conceptual innovation design of drill chuck as an example, this method was proved to utilize patent knowledge for conceptual design, and to improve product innovation capability.

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