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中国大学专利被企业引用网络分析 —以清华大学为例

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The network of Chinese university patents cited by industrial patents:Taking Tsinghua University as an example

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摘要 专利引用是技术或知识溢出的重要机制,网络拓扑分析的引入有助于理解专利引用网络的结构特征,揭示专利引用过程中的技术或知识流动规律。在USPTO系统中,检索中外企业专利引用清华大学专利的相关数据,构建清华大学专利被企业引用网络,并运用社会网络分析方法研究网络特征路径长度、聚合系数、中心度等结构特征。研究发现,清华大学专利被企业引用网络的特征路径长度小,聚合系数较高,存在明显的小世界现象;网络中心度分布呈现明显的"少数结点拥有大量联结,大量结点拥有少数联结"的现象,符合幂律分布特征。

关键词： 专利引用 小世界网络 无标度网络 清华大学

Abstract： Patent citation is an important mechanism for technology or knowledge spillover. The introduction of network topology analysis is conduced to understand the structure of patent citation network and reveal the rules of technology or knowledge flow in the patent citation process. The relevant data were retrieved in the USPTO. These data were used to build the citation network of Tsinghua University patents cited by Chinese and foreign industrial patents. Social network analysis was used to measure the characteristic path length, clustering coefficient, and network centrality of patent citation network. The characteristic path length of patent citation network is short. The clustering coefficient of patent citation network is high. There is a significant small-world phenomenon in the citation network of Tsinghua University patents cited by industrial patents. The centrality distributions of patent citation network show that a few key patents have more connections than the others. The network centrality meets power-law distribution.

Keywords： patent citation small world network scale-free network Tsinghua University
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