**Analysis on Corporate Technology and Forecasting Company Strategy**

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**Keywords**

Patent, Directed Network, Link Prediction, Text Mining, Corporate Strategy

**Background**

In 2013, United States Patent & Trademark Office estimated that value of IP (intellectual property) to the U.S economy was more than $5 trillion and contributes to employment for about 18 million American people. Also, more developed nations have the tendency of presenting higher value in IP.[[1]](#footnote-1) Among the category of IPs, patent provides exclusive rights for successful applicants, endows strong market position and fosters development of innovative products. The importance of patent is in strategical and financial assets for business firms. The ongoing international patent war between Apple Inc and Samsung Electronics pertinent to their design rights is an exemplary case that highlights significance of managing patents.

Patent data is a self-explanatory information of technological breakthroughs or development. Also, because as it is well organized and structured set, facilitation of preprocessing led to various attempts of visualization, text-based, citation-based analysis of patents. However, analysis by “corporate-unit” seems to lack in its numbers. Patent portfolio analysis of companies can be utilized to diagnose strength of company and relative innovative power within a specific market segment.[[2]](#footnote-2) The results of diagnosis can be integrated with corporate data, providing insights about suitable cooperation or acquisition strategy. This may contribute to vitalization of business activity and encouragement of technological advancement.

**Objective**

This paper aims to generate directed patent asset network of individual companies from USPTO bulk data. The patent network can be seen as a historical evidence of evolution of company’s technological assets. In reference to theory of link prediction and comparison to other patent networks can enable forecasting company’s next technology of interest. Corporate strategy can be

**Methodology**

The United States Patent and Trademark Office, an agency that issues patents to inventors and business for their inventions, provides bulk data of patents. By classifying the bulk data by organizations, dates and performing text analysis on patent contents, corpus and timeline of interested technology can be generated. Comparison of corpus and measuring cosine similarity of vectorized words can provide technological similarity index of respective corporations. The propagation of technological interest of respective corporate can be drawn as a network, using patent issued dates.

**Significance, Expected Outcomes**

In general, when corporate shifts focus outside of their scope of business area, acquisitions of startups with relevant technologies are adopted as prevalent strategy. This is for rapid transition by absorption of knowledge and technology in the new field. In this sense, analyzing patents may enable a peek into the next moves of business and corporates as well as suggest which corporate or patent owner they can negotiate with.

The acknowledgement of strategic movement of corporates indirectly disclose specific technologies receiving spotlights and lead to prediction of emerging technologies. This information can be used by government officials or educators to create job opportunities and nurture experts of relevant technologies. For companies, structural holes can be identified in patent network and recommendation of filling the gap with relevant patent may be suggested.

1. Thomas Bollyky (10 April 2013). ["Why Chemotherapy That Costs $70,000 in the U.S. Costs $2,500 in India"](https://www.theatlantic.com/health/archive/2013/04/why-chemotherapy-that-costs-70-000-in-the-us-costs-2-500-in-india/274847/). *The Atlantic*. The Atlantic Monthly Group. Retrieved 18 April 2013 [↑](#footnote-ref-1)
2. Fabry, Bernd & Ernst, Holger & Langholz, Jens & Köster, Martin, 2006. "[Patent portfolio analysis as a useful tool for identifying R&D and business opportunities--an empirical application in the nutrition and health industry](https://ideas.repec.org/a/eee/worpat/v28y2006i3p215-225.html)," [World Patent Information](https://ideas.repec.org/s/eee/worpat.html), Elsevier, vol. 28(3), pages 215-225, September [↑](#footnote-ref-2)