

Applications of Data Mining For Chemical Patents

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Abstract: The quality of human capital is crucial for high-tech companies to maintain competitive advantages in knowledge economy era the most common goal of the factory owner is to achieve better quality in the final product by means of process improvements. The data mining methods adopted are briefly introduced. The main focuses are on the successful applications of data mining methods in chemistry and chemical engineering. The discoveries of chemical knowledge cover the formation of ternary intermetallic compounds, structure activity relationships of drugs, and industrial optimization based on chemical data mining method, non-chemical provisional patent application and chemical provisional patent application especially by using statistical pattern recognition and support vector machine.

Keywords: Application Chemical patents, Decision making, knowledge structuring.

I. Introduction

A great deal of information is embedded within the chemical research literature information that could be invaluable in efforts to synthesize drugs.[1] Now, a team of German researchers are developing software that could help to make that process more efficient and rapid by taking a page from a search engine's book.



Fig 1: Drugs by Synthesizing Chemical Compounds

Before a new drug can be used to treat ailments or disease, one of the first crucial processes in making that drug is to synthesize its chemical compounds. [2, 3] This is quite literally, joining one atom at a time to form new molecular structures at a time to form new molecular structures.[4] But, the job of developing chemicals can be a laborious one, with researchers having to manually sift through thousands of patent information, documents and images. This slows the speed at which medicinal compounds can reach the public. [5] Now, German researchers have developed a prototype software tool that uses the parallel processing power of high-performance computers to automatically find the relevant data faster. [6] For some, chemical synthesis may be unexciting, but it's the alchemy of modern science. A dangerous chemical in nature can be harnessed to help cure the most deadly human diseases.[7] Last year, a toxic compound called Palau' amine that is produced within marine sponges, was successfully synthesized by US researchers because of its antibiotic, anticancer and antifungal properties. [8]

Now, in Europe, chemists are working directly with academics to streamline their working process. Taros chemicals, a German commercial chemical service provider, is working with Fraunhofer, Europe's largest non-profit application-Orientated organization. Fraunhofer is involved in everything from communication, energy, the environment, health security and have developed revolutionary algorithms such as MP3 compression in 2004.

II. Searching a patent Data base

The awareness on how to search a patent data base is essential in order to get maximum information on several areas of patent search. There are different tasks for which patent search are conducted, such as Patentability search. This is the first step in patent search in order to check whether your invention is valid, original and also to check whether there exist inventions similar to yours. Thus it would be best if we

conduct patentability search before the development of the invention. State-of-the-art search. The search is done to get information related to prior technology in particular field. The researcher or the inventor will get a better idea about prior inventions in their new technical field of research. The state of the art search will help to wide scope or to conduct more effective and strategic research work. Patent to product mapping search. This is a comprehensive method to get information on technology development trends, competitor styles, market involvement, product growth, and determining the scope and utilization of information for patent procurement through examination and mapping of data to enable research and development. Bibliographic search, the search is done to get background information on the work done in the specified area in chronological order. The search is performed as personal background search, history search, and chronological search.

III. Semantic Method

Their latest algorithm is being developed at the Fraunhofer Institution for Algorithms and scientific computing (SCAI) to help chemists at taros chemicals extract fundamental information from chemical literature when synthesizing chemicals compounds.

Researchers at Fraunhofer are creating algorithms, similar to ones used by Google, but even more complex. This is because the questions that chemists need answers for cannot be done by keyword analysis alone. Information has to be extracted and presented in a compact and structured way. The software being developed by SCAI automatically reads vast amounts of data to identify chemical structures, chemical names, drug names, relations between entities, and medical impact.

The project is called Unstructured Information Management Architecture using High- Performance Computers or UIMA-HPC. Unstructured Information Management Architecture is an open source standard, originally developed by IBM, for extracting large amounts of context-relevant data using semantic analysis tools. It links data via contextual meaning and adds structure to unstructured data.

Zimmermann and his team are working with German national research center, FZ Julich, to develop new software tools that combine UIMA with grid computing management software UNICORE (Uniform Interface to Computing Resources) to make an on-demand service for chemists. But, they are already steaming ahead with the successful testing of a prototype which is being used on a small collection of literature

IV. Advantages And Disadvantages Of A Chemical Provisional Patent

There are many advantages to filing a chemical provisional patent application including.

Lost cost, reduced paperwork and filing requirements compared to other types of patent applications, Easy online filing process. Once you file your provisional patent application, you can use the term “patent pending” to describe your idea and your invention has some protection called “provisional right”. If done properly, your provisional patent application should give a patent priority date which is recognized by most countries around the world a special type of international patent application called a PCT application.

There are also some disadvantages chemical provisional patent applications.

- 1) No formal examination and no issuance. A chemical provisional application acts as a place holder and will only last for 12 months. Once those 12 months are up, you must either let your application go abandon, or file, a full non-chemical provisional application.
- 2) A chemical provisional patent may give you a false sense of protection. People often file quick and short chemical provisional patent applications and think that their idea is fully protected. However a chemical provisional patent must meet all the same requirements to describe your invention in detail as a non-chemical provisional does. If your provisional does not meet all these requirements, it may not give you any protection at all.

There are not many differences between the look and content of a non-chemical provisional patent application and a chemical provisional patent application. Similarities of a non-chemical provisional patent application and a chemical provisional patent application include.

- 1) Both are forms of a utility patent application which means they serve usefulness such as a new tool, machine, or method.
- 2) Both must have a complete and accurate description of your invention and teach exactly how to make and use the invention.
- 3) Both can be filled online at the USPTO website with a fee and give you a “patent application” status.

Some Major Differences Between A Non Chemical Provisional Patent Application And A Chemical Provisional Patent Application Are:

- 1) Chemical Provisional patent applications cannot issue as a granted patent. They are only used as a temporary place holder and they die out after 1- year.
- 2) A non chemical provisional patent application can eventually become an issued patent.

- 3) Chemical Provisional patent applications do not need any claims.
- 4) A non chemical provisional patent application requires at least one claim.
- 5) Chemical provisional patent applications do not need proper formatting or fancy drawings making them easier and less expensive to prepare.
- 6) A non chemical provisional patent application must be in the proper USPTO format and include formal drawings.
- 7) Non- chemical provisional patents require a formal statement by the inventor called a declaration while chemical provisional patent applications do not.
- 8) Chemical provisional patent application will not publish and remain secret while non-chemical provisional patent applications will publish in about 18 months from your filling date.

V. Conclusion

The current debate over patent protection tends to concentrate on the role of patent as an instrument of economic policy and development. The economical, social and cultural development of nations and societies now depend more on intellectual resource rather than materials or natural resources. At times, patents are justified on the ground that it acts as an information system whereby an invention can be used by the society for economic development as it economic system. Patenting of modified natural products adversely affects innovations by the formers and ordinary people and therefore the patent should not after knowledge generated by common man. This involves according greater protection to the traditional knowledge of the people. It is believed that the ongoing process of harmonization of patent law having its virtues in developing uniform standards of patentability and patent procedures throughout the world. Yet, it has own limitations particularly in protecting the interests of the developing and least developed countries. To mitigate hardships that may be caused to such countries including India, it is asserted that the above suggestions if incorporated would be of some benefit. The proposed approach for the decision making is likely to be used for the application in many areas of the manufacturing and service industries.

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