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Comparison of Google Advanced Patent Database and Espacenet for Prior Art Search Enhancement

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Abstract: Before filing or after filing a patent application, patent prior art search/state of the art search is done to check for novelty, nonobiviousness, industrial utility of the inventions/patent application which decides the patentability.in this manuscript, comparison of open source patent search databases is done to check which database picks up the keywords, reduces the iterations and gives accurate result..
Keywords: IPR, TRIPS, Google Advanced Patent, Espacenet.

I. INTRODUCTION

IPR(Intellectual Property Rights) are the rights awarded by the society to individuals or organization over the creations of innovative work. They generally specify a time period during which others do not copy the innovations, Idea allowing him or her to commericalize it and recover any investment on research and development. Pior to TRIPS(Trade Related Intellectual property rights)Agreement, there are number of international treaties and conventions covering Intellectual Property Rights. the conventions covering geographical indications are Paris convention and Madrid Agreement(1891)and Lisbon agreement(1958) these treaties however failed to exert much influence and could not become competent. Berne convention for protection of literary and artistic works as one of oldest international treaties in copyright i.e rights of authors in literary and artistic works. Hague agreement covers the protection of industrial designs. Rome conventions defined as the standards of protection of related rights enacted to protect artistic and broadcasting organization.. Patent co-operation treaty is to bring about the effectiveness and economy by simplying patent process ..International convention for protection of new varieties of plants was covered in 1991.New varieties require time money and effort. Trademark law treaty(1994)simplifies and harmonises administrative procedures with respect to national application and protection has endowed with intellectual created by beneficial faculty and same has been effectively utilized thereby improving the standard of living right from the stone age .It is a property which has been created by exercise of intellectual faculty. India has a long credible protection of IPR to a system of well developed substantiated laws and establishment of legal ,administrative infrastructure for IPR enforcement. The importance of patent system for innovative research and development which inturn causes the industrial development of a country. The progress and prosperity of a nation depend on level of scientific, industry and technological development. The inventors, research workers, entrepreneurs have to be encouraged, ,inspired, accelerate the research work, Research and Developmental activities by providing incentives and the rewards for their valuable work for the progress of the country. In the absence of any other bulletin system granting patterns for new inventors have to be accepted all over the world. Industrial property forms part of the broader concept of "intellectual property."The objects of intellectual property are the creations of the human mind, the human intellect hence the expression "intellectual" property. In a somewhat simplified way, one can state that intellectual property relates to pieces of information which can be incorporated in tangible objects at the same time in an unlimited number of copies at different locations anywhere in the world. The property is not in those copies but in the information reflected in those copies. Similar to property in movable things and immovable property, intellectual property, too, is characterized by certain limitations, for example, limited duration in the case of copyright and patents.

A. The Two Branches Of Intellectual Property

1) *Copyright:* Copyright relates to artistic creations, such as poems, novels, music, paintings, cinematographic works, etc. In most European languages other than English, copyright is called author's rights. The expression "copyright" refers to the main act which, in respect of literary and artistic creations, may be made only by the author or with his authorization. That act is the making of *copies* of the literary or artistic work, such as a book, a painting, a sculpture, a photograph, a motion picture. The second expression, "author's rights" refers to the person who is the creator of the artistic work, its author, thus underlining the fact, recognized in most laws, that the author has certain specific rights in his creation, for example, the right to prevent a

distorted reproduction, which can be exercised only by himself, whereas other rights, such as the right to make copies, can be exercised by other persons, for example, a publisher who has obtained a license to this effect from the author

2) *Industrial Property:* Industrial property, is sometimes misunderstood as relating to movable or immovable property used for industrial production, such as factories, equipment for production. Typically, the creations to which industrial property relates are inventions and industrial designs. (Simply stated, inventions are solutions to technical problems, and industrial designs are aesthetic creations determining the appearance of industrial products.) In addition, industrial property includes trademarks, service marks, commercial names and designations, geographical indications (indications of source and appellations of origin) and the protection against unfair competition. Here, the aspect of intellectual creations—although existent—is less prominent, but what counts here is that the object of industrial property typically consists of signs transmitting information to consumers, in particular, as regards products and services offered on the market, and that the protection is directed against unauthorized use of such signs which is likely to mislead consumers, and against misleading practices in general.
3) The expression "industrial" property may appear not to be entirely logical because it is only as far as inventions are concerned that the main segment of economy that is interested in them is industry. Indeed, in the typical situation, inventions are exploited in industrial plants. But trademarks, service marks, commercial names and commercial designations are of interest not only to industry but also and mainly to commerce. Notwithstanding this lack of logic, the expression "industrial property" has acquired a meaning which clearly covers not only inventions but also the other objects just mentioned.
4) In the hall of the WIPO headquarters building, there is an inscription in the cupola whose text tries, in a few words, implicitly to define intellectual works. It also tries to convey the reasons for which intellectual works should be "property," that is, why their creators should enjoy advantages secured by law. Finally, the inscription invokes the duty of the State in this field. Naturally, the inscription makes no claim to legal exactitude. Its intent is to stress the cultural, social and economic importance of protecting intellectual property.

B. *Inventions*

As has already been said, inventions are new solutions to technical problems. This is not an official definition. Most laws dealing with the protection of inventions do not define the notion of inventions. However, the WIPO Model Law for Developing Countries on Inventions (1979) contained a definition which read as follows: "'Invention' means an idea of an inventor which permits in practice the solution to a specific problem in the field of technology."

C. *Patents*

Inventions are characteristically protected by patents, also called "patents for invention." Every country which gives legal protection to inventions—and there are more than 140 such countries—gives such protection through patents although there are a few countries in which protection may also be given by means other than patents, as will be seen below.

1) The word "patent" is often used in two senses. One of them is the document that is called "patent" or "letters patent.
2) The other is the content of the protection that a patent confers
3) First of all, let us deal with the first sense of the word "patent," that is, when it means a document.
4) If a person makes what he believes is an invention, he, or if he works for an entity, that entity, asks the Government—by filing an application with the Patent Office—to give him a document in which it is stated what the invention is and that he is the owner of the patent. This document, issued by a Government authority, is called a patent or a patent for invention.
5) Not all inventions are patentable. Generally, patent laws require that, in order to be patentable, the invention must be new, it must involve an inventive step (or it must be non-obvious), and it must be industrially applicable. These three requirements, sometimes called the requirements or conditions of patentability, have been incorporated in Article 27.1 of the Agreement on Trade-Related Aspects of Intellectual Property Rights ("the TRIPS Agreement").

D. *Utility Models*

Utility models are found in the laws of a limited number (about 20) of countries in the world, and in the OAPI regional agreement. In addition, some other countries (for example, Australia and Malaysia) provide for titles of protection which may be considered similar to utility models. They are called "petty patents" or "utility innovations." The expression "utility model" is merely a name given to certain inventions, namely—according to the laws of most countries which contain provisions on utility models—inventions in the mechanical field. Utility models usually differ from inventions for which ordinary patents for invention are available mainly in three respects: *first*, in the case of an invention called "utility model," either only novelty but no inventive step

is required or the inventive step required is smaller than in the case of an invention for which a patent for invention is available; second, the maximum term of protection provided in the law for a utility model is generally shorter than the maximum term of protection provided for a patent for invention; and *third*, the fees required for obtaining and maintaining the right are generally lower than those applicable to patents. Moreover, in certain countries there is also a substantial difference in the procedure for obtaining protection for a utility model: this procedure is generally shorter and simpler than the procedure for obtaining a patent for invention.

E. Industrial Designs

1) Generally speaking, an industrial design is the ornamental or aesthetic aspect of a useful article. Such particular aspect may depend on the shape, pattern or color of the article. The design must appeal to the sense of sight. Moreover, it must be reproducible by industrial means; this is the essential purpose of the design, and is why the design is called "industrial."

2) In order to be protectable, an industrial design must, according to some laws, be new and, according to other laws, original. The requirements of novelty or originality has been incorporated in Article 25.1 of the TRIPS Agreement

3) Industrial designs are usually protected against unauthorized copying or imitation. Under Article 26.3 of the TRIPS Agreement, the duration of protection available shall amount to at least 10 years. Members of the said Agreement are also obliged to ensure that requirements for securing protection of textile designs, in particular in regard of any cost, examination or publication, do not unreasonably impair the opportunity to seek and obtain such protection

4) The document which certifies the protection may be called a registration certificate or a patent. If it is called a patent, one must, in order to distinguish it from patents for invention, always specify that it is a patent for industrial design.

F. Intellectual Property In Respect Of Integrated Circuits

1) The question of the type of protection to be given to the layout-design, or topography, of integrated circuits is relatively new. Although prefabricated components of electrical circuitry have been used for a long time in the manufacture of electrical equipment (for example, radios), large-scale integration of a multitude of electrical functions in a very small component became possible only a few years ago as result of advances in semiconductor technology. Integrated circuits aremanufactured in accordance with very detailed plans or "layout-designs.

2) The layout-designs of integrated circuits are creations of the human mind. They are usually the result of an enormous investment, both in the terms of highly qualified experts, and financially. There is a continuing need for the creation of new layout-designs which reduce the dimensions of existing integrated circuits and simultaneously increase their functions. The smaller an integrated circuit, the less the material needed for its manufacture, and the smaller the space needed to accommodate it. Integrated circuits are utilized in a large range of products, including articles of everyday use, such as atches, television sets, washing machines, automobiles, etc., as well as sophisticated data processing equipment.

3) Whereas the creation of a new layout-design for an integrated circuit involves an important investment, the copying of such a layout-design may cost only a fraction of that investment. Copying may be done by photographing each layer of an integrated circuit and preparing masks for the production of the integrated circuit on the basis of the photographs obtained. The high cost of the creation of such layout-designs, and the relative ease of copying, are the main reasons for the prtection of layout-designs.

G. Trade Names

1) Another category of objects of industrial property is "commercial names and designations."

2) A commercial name or trade name—the two expressions mean the same thing—is the name or designation which identifies the enterprise. In most countries, trade names may be registered with a government authority. However, under Article 8 of the Paris Convention for the Protection of Industrial Property, a trade name must be protected without the obligation of filing or registration, whether or not it forms part of a trademark. Protection generally means that the trade name of one enterprise may not be used by another enterprise either as a trade name or as a trademark or service mark and that a name or designation similar to the trade name, if likely to mislead the public, may not be used by another enterprise.

H. Geographical Indications

1) Finally, among commercial designations there are also geographical indications.

2) The TRIPS Agreement (Articles 22 to 24) establishes certain obligations as regards the protection of geographical indications, which are defined therein, for the purposes thereof, as "indications which identify a good as originating in the territory of a

Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin." The notions of "indications of source" and of "appellations of origin," which are used in the Paris Convention, encompass geographical indications as defined by the TRIPS Agreement.

3) An indication of source is constituted by any denomination, expression or sign indicating that a product or service originates in a country, a region or a specific place (for instance, "made in ..."). As a general rule, the use of false or deceptive indications of source is unlawful.
4) An appellation of origin is constituted by the denomination of a country, a region or a specific place which serves to designate a product originating there, the characteristic qualities of which are due exclusively or essentially to the geographical environment, in other words to natural and/or human factors. The use of an appellation of origin is lawful only for a certain circle of persons or enterprises located in the geographical area concerned and only in connection with the specific products originating there (for instance, "Bordeaux").

I. Protection Against Unfair Competition

1) The last object of the protection of industrial property is the protection against unfair competition. Such protection, required under Article 10*bis* of the Paris Convention, is directed against acts of competition that are contrary to honest practices in industry or commerce. The following in particular constitute acts of unfair competition in relation to industrial property: all acts of such a nature as to create confusion with the establishment, the goods or the industrial or commercial activities of a competitor; false allegations in the course of trade of such a nature as to discredit the establishment, the goods or the industrial or commercial activities of a competitor; and indications or allegations the use of which in the course of trade is liable to mislead the public as to the characteristics of goods.
2) The protection against unfair competition supplements the protection of inventions, industrial designs, trademarks and geographical indications. It is particularly important for the protection of know-how, that is: technology or information which is not protected by a patent but which may be required in order to make the best use of a patented invention.
3) The TRIPS Agreement contains, in its Article 39, provisions on the protection of undisclosed information (trade secrets). In the course of ensuring effective protection against unfair competition as provided in Article 10*bis* of the Paris Convention, Members of the TRIPS Agreement are required to provide natural and legal persons the possibility of preventing information lawfully within their control from being disclosed to, acquired by, or used by others without their consent in a manner contrary to honest commercial practices so long as such information:
4) is secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question;
5) has commercial value because it is secret; and
6) has been subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep it secret.

II. DSCRIPTION

A. Patent Search

Searching and search reports are generated for different reasons. As a consequence, search reports, even those relating to identical subject matter, will look different depending on the type of search requested. In general, there are six different types of patent searches, these being:

B. Due diligence Search

A due diligence search is designed to capture all relevant documentation available to a diligent searcher at a defined date. The search seeks to answer the following question – faced with a problem and without hindsight what solutions were available at the priority date to help solve the problem? Or put another way: given a problem and surrounded by all relevant information what avenues would be worthwhile exploring in an attempt to solve that problem or, at the very least, be worth investigating further? Adue diligence search is designed to capture all relevant documentation available to a diligent searcher at a defined date. The purpose of such a search is therefore to uncover all of the related subject matter available to a skilled addressee and will not be restricted by particular solutions. The number of documents recovered is considerable as the searcher attempts to survey the whole of a technical field. A due diligence search attempts to provide a comprehensive inventory of the state of a particular art.Due diligence searches are often conducted in

relation to patent litigation matters, although such a search can also provide an important source of a company's market intelligence. A due diligence search will reveal data on existing competitors and any newentrants to a market. It will also find out what competitors are doing and where, and can be used as a tool for analyzing future trends and as a basis for making strategic commercial, build and buy decisions.

C. Patentability Search

A patentability search is designed to uncover any barriers that will prevent an invention being granted exclusive patent rights. The searcher will seek answers to the following questions: is the invention new and novel? Does the invention disclose an inventive step? Is the invention capable of industrial application? To be patentable an invention must be novel, it must be inventive and it must be useful. A patentability search is often seen as a first step in obtaining a patent. Apatent attorney will form an opinion of an invention based on the patentability search. A patentability search is also an extremely important early step in deciding whether to proceed with an idea. A patentability search will allow you to make considered decisions as to whether you should continue to explore your idea through the patent process. It may prevent you from spending a lot of money on further research, development, manufacture, protection, and marketing of an idea that has already been thought of and may already be being exploited by others without your knowledge and in markets that you are unaware of. As the old adage says "an ounce of prevention is worth a pound of cure". A patentability search is often conducted after filing a provisional patent application but before filing a complete patent application, as it can be used to identify the possible scope or limits of an invention and will assist your patent attorney to draft a robust patent application with maximum scope but within the bounds of validity.

D. Patent Infringement Search

To establish whether an infringement of a patent has taken place the patent owner must prove that the following has occurred: the infringer has carried out a prohibited act (i.e. made, used, sold or imported a patented product, or has used a patented process, or has made, used or sold a product made directly from a patented process); that the prohibited act has taken place in the country where the patent has been granted; that the prohibited act has occurred after publication of a granted patent; that the prohibited act falls within the scope of at least one claim of the granted patent. An infringement search is designed to ascertain all of the above and will result in a search of the patent database applicable to a particular product or process. A patent infringement search should be conducted by any individual or company wishing to export products overseas or before entering into any agreement to supply goods overseas. Patents are restricted by territory so you may be free to export to some countries in which no patent protection is in place, but not to other countries where a granted patent is in force. An infringement search is less involved than a due diligence or patentability search, as it is restricted only to existing patents that remain in force and which have not lapsed or expired. An infringement search will generally only involve a search of patent databases covering the last 20 years or so. Another useful and important aspect of an infringement search is that it will reveal those patents that are likely to be infringed and therefore provide an opportunity to design around them or to make subtle improvements on them. It is not uncommon for competitors of existing patent holders to avoid infringement by making similar products not covered by the patent claims.

E. Freedom to Operate Search

A freedom to operate search invariably involves a narrow subject area search and can be limited to perhaps three or four key words, one or two patent classes and one or two applicants or inventors. This search will ask questions about a specific, clearly defined product or process about which much is already known. Similar to a patent infringement search the main purpose of the search is to determine whether known technology is free to use. That is: is the technology covered by a patent? If so, where is it covered? and is that patent still in force?

F. Document Status Search

This type of search is often commissioned by companies wishing to make, use, import or sell generic goods, usually pharmaceuticals or base chemicals into a specific jurisdiction.

It is similar to a freedom to operate search, although in most cases it is more specific. For example, the patent is usually known, or specific subject matter such as the compound name is known. The search is often jurisdiction (country) dependent and will invariably be run several times over a number of years often as a watching service. This type of search will look at a specific compound or patent number, equivalent patents filed around the world and their present status.

G. Product / Process Specifications Search

This search type is probably the narrowest of all of the searching types and may be commissioned by a company wishing to find out more about a specific technology. It is often used to answer a specific technology problem, the solution to which may be found in a single patent. Such a search can often lead to a license or cross license between like-minded companies. Patent Search is to determine the novelty, Inventiveness and industrial utility of the research disclosure. This search needs to be done rigorously in patent and non patent literature to find out if any prior art overlap exists or not. If prior art exists, then its non patentable else its patentable

H. Steps to conduct a patent search.

Summarize the invention in 100 words covering the novel key aspects alone.

Frame the key aspects from the keywords.

Perform an iterative combination of Key words such that the combination of novel key aspects is not present in any one patent or non patent document,

III. NUMERICAL RESULTS

Database :Google Advanced Patent Search database

Keywords used: Android, Malware ,security, trojan, virus, worm

A. Iteration:1

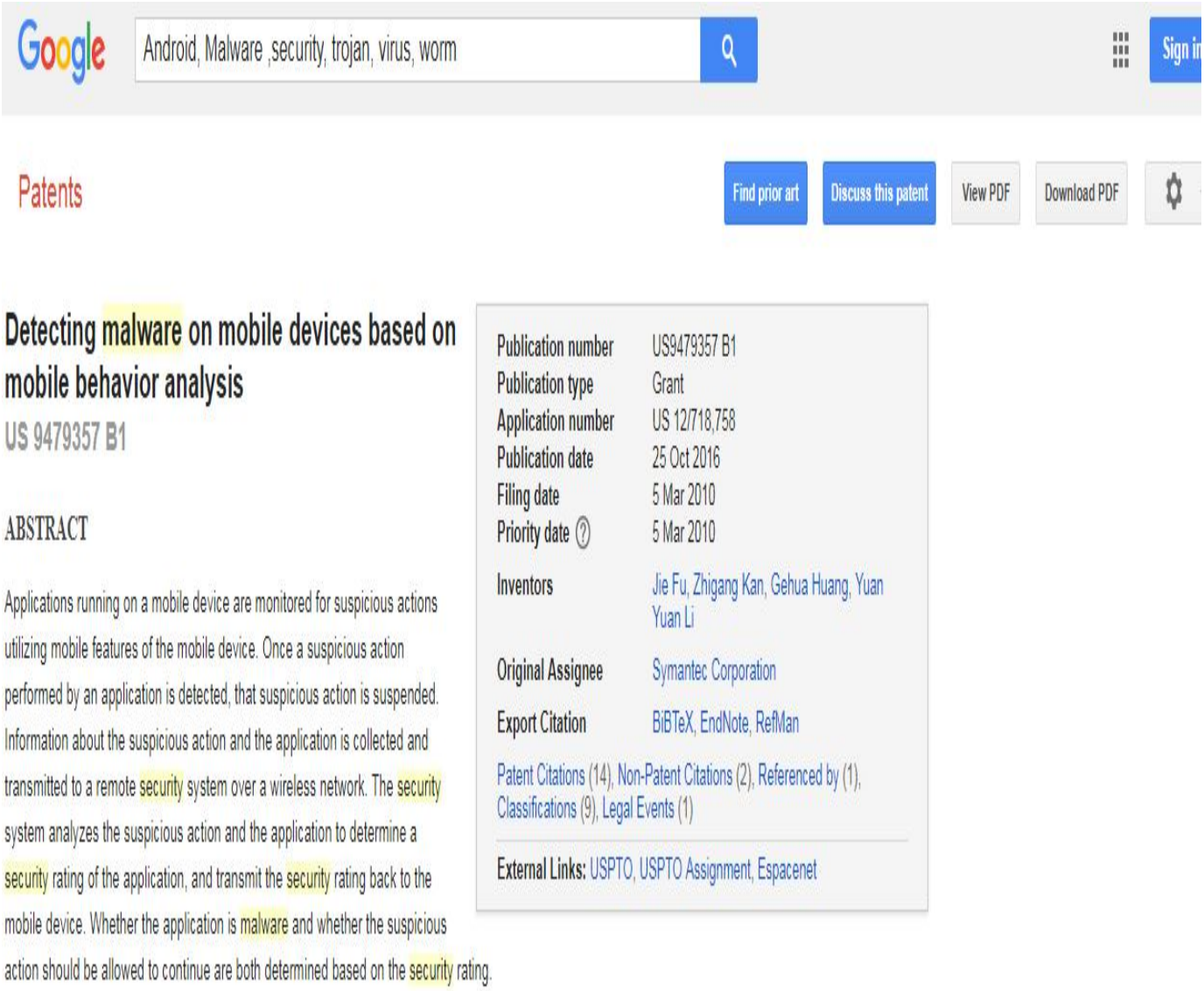

Fig.1shows the search results ie the relevant patent prio art result of the novel keywords.

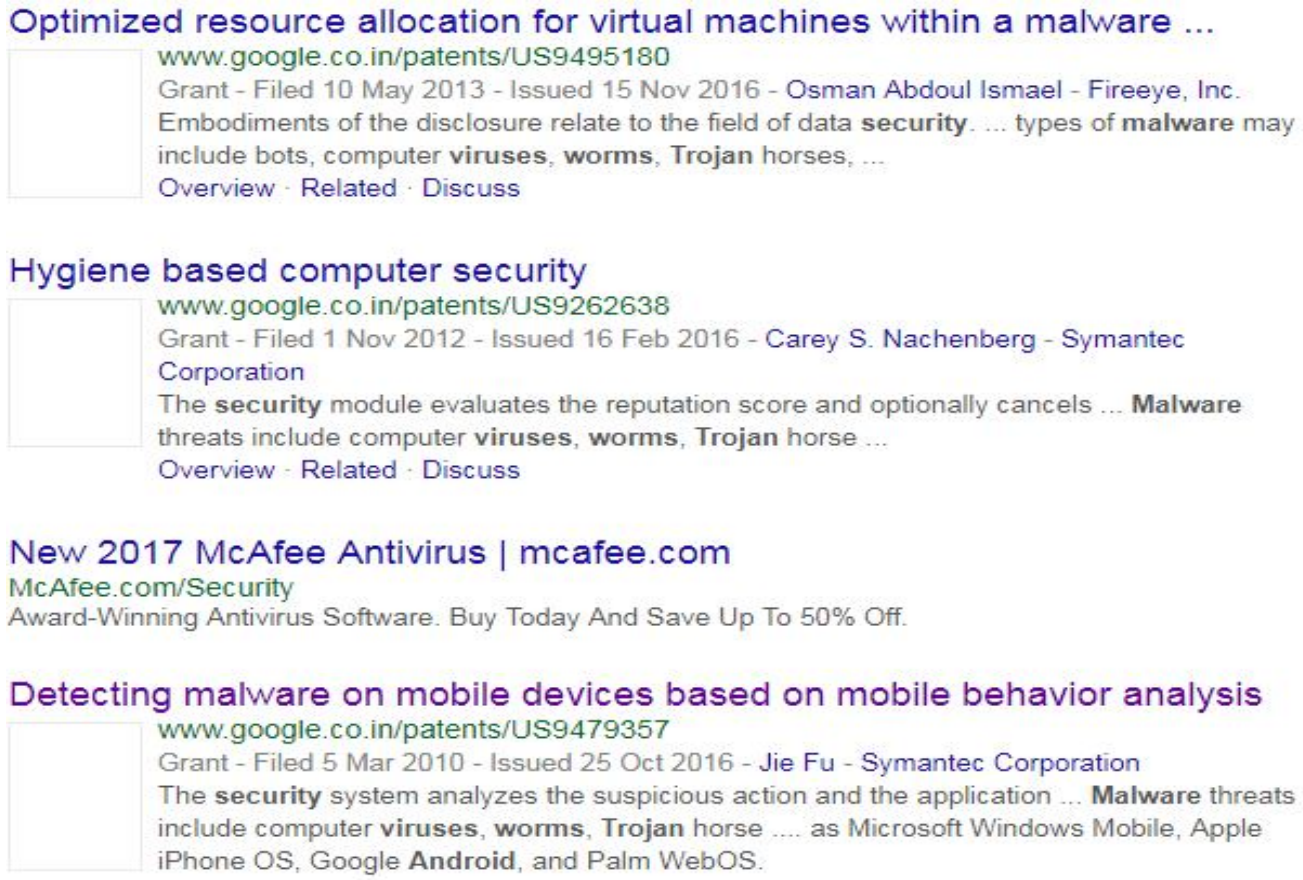

Fig2: Google Advanced Patent window for the projected novel keywords

B. Database : Espacenet

Keywords used: Android, Malware, security, trojan, virus, worm

Ieration1

Fig2: Espacenet window for the keyword search string

C. Output

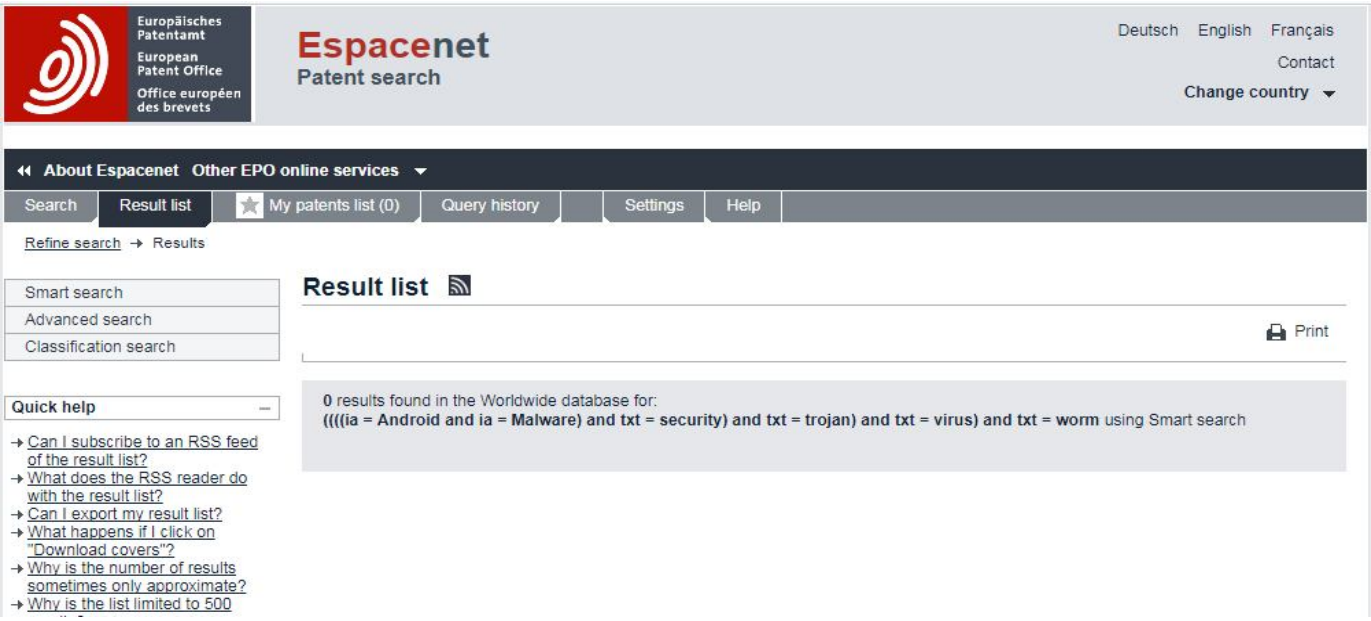

Fig3: Output of the Keywords

1) *Ieration2:*Android,security, trojan, virus, worm

Fig4: Output of the Keywords

2) *Iteration3*:Android,security, , virus, worm

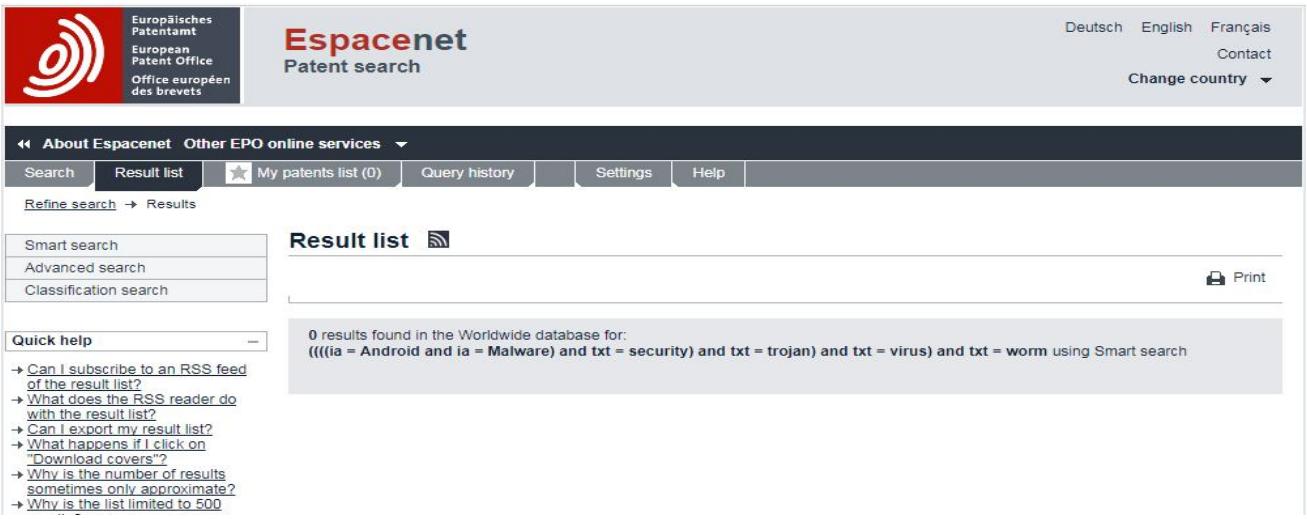

Fig4: Output of the Keywords

3) *Iteration4 :* Mobile, Malware ,Security

	Inventor:	Applicant:	CPC:	IPC:	Publication info:	Priority date:
1. BLACK MARKET COLLECTION METHOD FOR TRACING DISTRIBUTORS OF MOBILE MALWARE	GO WOONG [KR] CHOI EUN YOUNG [KR] (+2)	KOREA INTERNET & SECURITY AGENCY [KR]	H04L63/1416 H04L63/20	H04L29/06	US2017201532 (A1) 2017-07-13	2016-01-07
2. Devices, Systems, and Methods for Detecting Proximity-Based Mobile Malware Propagation	WANG WEI [US] XU GANG [US] (+1)	AT & T IP I LP [US]	G06F21/00 G06F21/564 G06F2221/034 (+3)	G06F21/56 H04L29/06	US2017134398 (A1) 2017-05-11	2010-12-08
3. Dynamic patching of multiple, functionally equivalent variations of various software modules for security reasons	ISLAM NAYEEM GUPTA RAJARSHI	QUALCOMM INC	G06F21/51 G06F21/52 G06F21/55 (+4)	G06F21/55 G06F21/57 G06F9/445	CN106462429 (A) 2017-02-22	2014-06-27
4. Systems and methods for pre-installation detection of malware on mobile devices	XUE YONG LING	SYMANTEC CORP	G06F21/554 G06F21/564 G06F21/57 (+10)	G06F21/56 H04L29/06 H04L29/08 (+1)	CN106415584 (A) 2017-02-15	2014-03-11

Fig5: Output of the Keywords

(12) **United States Patent**
Fu et al.

(10) **Patent No.: US 9,479,357 B1**
(45) **Date of Patent: Oct. 25, 2016**

(54) **DETECTING MALWARE ON MOBILE DEVICES BASED ON MOBILE BEHAVIOR ANALYSIS**

(75) Inventors: **Jie Fu**, Chengdu (CN); **Zhigang Kan**, Beijing (CN); **Gehua Huang**, Beijing (CN); **Yuan Yuan Li**, Chengdu (CN)

(73) Assignee: **Symantec Corporation**, Mountain View, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1671 days.

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H04L 12/58 (2006.01)
H04L 29/06 (2006.01)

(52) **U.S. Cl.**
CPC ***H04L 12/585*** (2013.01); ***H04L 51/12*** (2013.01); ***H04L 51/38*** (2013.01); *H04L 63/0227* (2013.01)

(58) **Field of Classification Search**
CPC . H04L 12/585; H04L 12/5895; H04L 51/12; H04L 63/0227; H04L 63/1491; H04L 51/38
USPC 726/23–25; 713/182–190, 200–201
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2002/0013910 A1* 1/2002 Edery et al. 713/201
2002/0066034 A1* 5/2002 Schlossberg et al. 713/201
2003/0079145 A1* 4/2003 Kouznetsov et al. 713/200
2003/0229801 A1* 12/2003 Kouznetsov et al. 713/200
2003/0233566 A1* 12/2003 Kouznetsov et al. 713/200
2003/0233574 A1* 12/2003 Kouznetsov et al. 713/201
2004/0003276 A1* 1/2004 Kouznetsov et al. 713/200
2004/0010703 A1* 1/2004 Kouznetsov et al. 713/200
2004/0025942 A1* 2/2004 Kouznetsov et al. 713/200
2007/0214488 A1* 9/2007 Graham et al. 705/51
2007/0240222 A1* 10/2007 Tuvell et al. 726/24
2008/0086776 A1* 4/2008 Tuvell et al. 726/24
2010/0011432 A1* 1/2010 Edery et al. 726/11
2011/0154490 A1* 6/2011 DeLuca et al. 726/23

OTHER PUBLICATIONS

Oberheide, J. et al., "Virtualized In-Cloud Security Services for Mobile Devices," 2008, pp. 1-5. [Online] [Retrieved on Mar. 28, 2011] Retrieved from the Internet<URL http://www.eecs.umich.edu/fjgroup/pubs/mobivirt08-mobilecloud.pdf>.

* cited by examiner

Primary Examiner — Don Zhao
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(57) **ABSTRACT**

Applications running on a mobile device are monitored for suspicious actions utilizing mobile features of the mobile device. Once a suspicious action performed by an application is detected, that suspicious action is suspended. Information about the suspicious action and the application is collected and transmitted to a remote security system over a wireless network. The security system analyzes the suspicious action and the application to determine a security rating of the application, and transmit the security rating back to the mobile device. Whether the application is malware and whether the suspicious action should be allowed to continue are both determined based on the security rating.

17 Claims, 4 Drawing Sheets

US 9,479,357 B1

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DETECTING MALWARE ON MOBILE DEVICES BASED ON MOBILE BEHAVIOR ANALYSIS

BACKGROUND

1. Field of Disclosure
The disclosure generally relates to the field of computer security, in particular to detecting malicious software applications on mobile devices.
2. Description of the Related Art
A wide variety of malicious software (malware) can attack modern computers. Malware threats include computer viruses, worms, Trojan horse programs, spyware, adware, crimeware, and phishing websites. Malicious entities sometimes attack servers that store sensitive or confidential data that can be used to the malicious entity's own advantage. Similarly, other computers, including home computers, must be constantly protected from malicious software that can be transmitted when a user communicates with others via electronic mail, when a user downloads new programs or program updates, and in many other situations. The different options and methods available to malicious entities for attack on a computer are numerous.
Conventional techniques for detecting malware on personal computers, such as signature string scanning, are proven to be ineffective for detecting malware on mobile devices such as mobile phones. Because the mobile devices typically have limited computing capacity, resource-demanding malware detection techniques such as virtual execution and sandboxing cannot be applied in the mobile devices. Similarly, because of their resource limitations, collecting virus samples is also difficult on mobile devices, making fingerprint-based malware detection techniques unreliable for detecting malware on mobile devices. In addition, because fingerprint-based malware detection techniques rely upon predefined fingerprints of known threads, they cannot detect unknown threads. Accordingly, there is a need for new techniques that can detect malware on mobile devices.

SUMMARY

Embodiments of the present disclosure include methods (and corresponding systems and non-transitory computer-readable storage media) for detecting malware on mobile devices.
One aspect of the present disclosure is a computer-implemented method for detecting a malicious application on a mobile device, comprising: detecting a suspicious action performed by an application running on the mobile device, the suspicious action attempting to access a mobile feature of the mobile device; suspending the suspicious action performed by the application; collecting information about the suspicious action and the application; transmitting

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running on the mobile device, the suspicious action attempting to access a mobile feature of the mobile device; suspending the suspicious action performed by the application; collecting information about the suspicious action and the application; transmitting the collected information to a remote computer through a wireless network; receiving a security rating of the application through the wireless network, the security rating comprising a measurement of a likelihood of the application for being malware; and determining whether the application is malware based on the security rating.
Still another aspect of the present disclosure is a non-transitory computer-readable storage medium encoded with executable computer program code for detecting a malicious application on a mobile device, the computer program code comprising program code for: detecting a suspicious action performed by an application running on the mobile device, the suspicious action attempting to access a mobile feature of the mobile device; suspending the suspicious action performed by the application; collecting information about the suspicious action and the application; transmitting the collected information to a remote computer through a wireless network; receiving a security rating of the application through the wireless network, the security rating comprising a measurement of a likelihood of the application for being malware; and determining whether the application is malware based on the security rating.
The features and advantages described in the specification are not all inclusive and, in particular, many additional features and advantages will be apparent to one of ordinary skill in the art in view of the drawings, specification, and claims. Moreover, it should be noted that the language used in the specification has been principally selected for readability and instructional purposes, and may not have been selected to delineate or circumscribe the disclosed subject matter.

BRIEF DESCRIPTION OF DRAWINGS

Figure (FIG. **1** is a high-level block diagram of a computing environment according to one embodiment of the present disclosure.
FIG. **2** is a high-level block diagram illustrating an example of a computer for use in the computing environment shown in FIG. **1** according to one embodiment of the present disclosure.
FIG. **3** is a high-level block diagram illustrating modules within a security module according to one embodiment of the present disclosure.
FIG. **4** is a high-level block diagram illustrating modules within a security system according to one embodiment of the present disclosure.
FIG. **5** is a flow diagram illustrating a process for detecting malware on a mobile device according to one embodiment of the present disclosure.

Fig 6: Sample Output of the prior art document

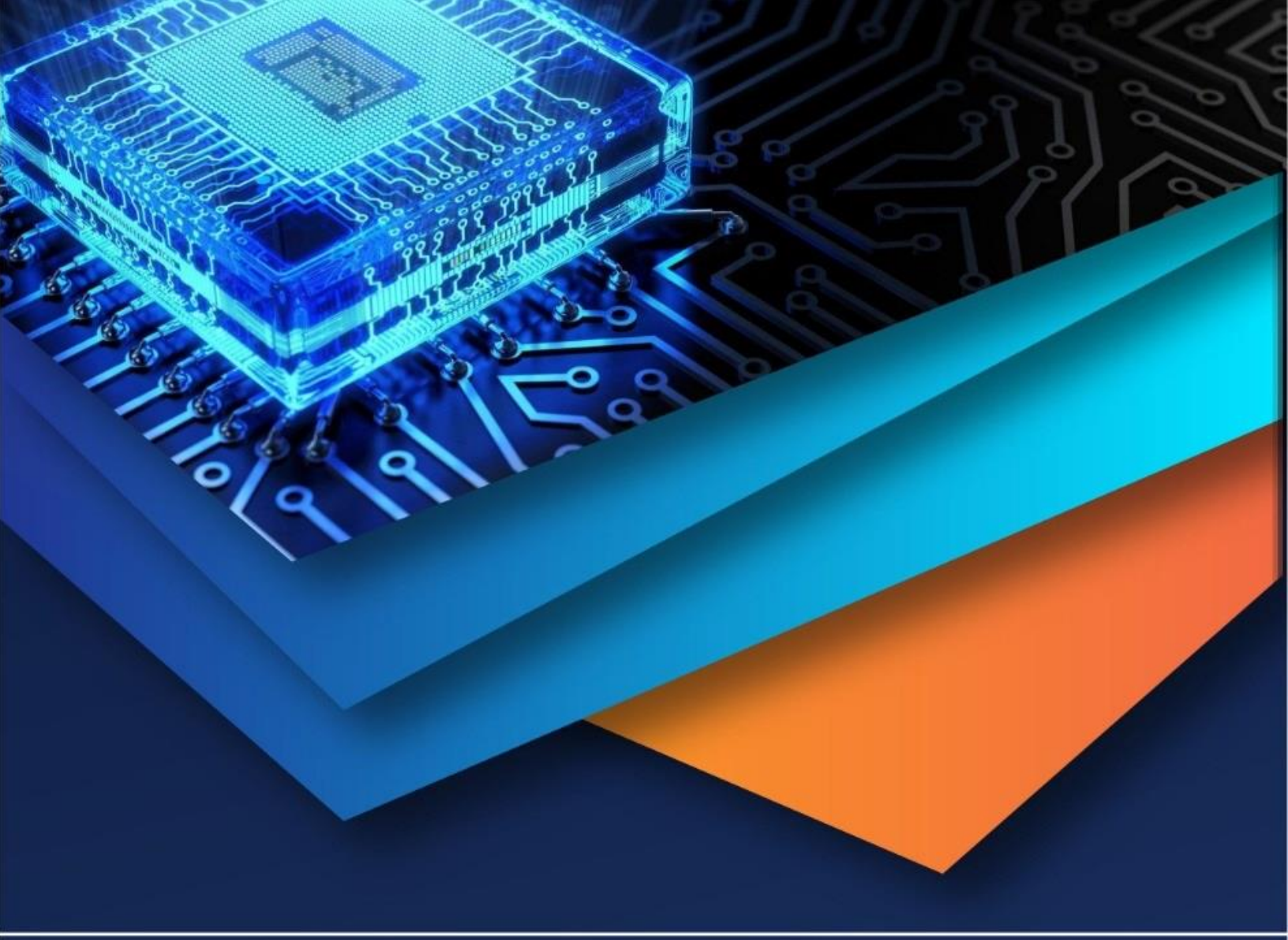
SL.NO	PARAMTERS	GOOGLE ADVANCED PATENT SEARCH	ESPACENET
1	Keyword strategy	Easier and Max no of keywords for better prior arts	Complex and Minimum no. of keywords
2	Operators	Not Required but only in rare cases	Required and Mandatory for quicker results
3	Iterations	Less required	More no. of iterations required
4	Prior art references	More	Less
5	Compatibility	Claims, description, abstract, drawings, reference, IPC/CPC codes in one window	Claims, description, abstract, mosiacs in separate window
6	In-house tools	Google Patents, Google Prior art finder	No such tools
7	Update of patent applications	Published, Pending, Grant from patent office are indexed to higher extent in google advanced patent search	Published, Pending, Grant from patent office are indexed to lesser extent in Espacenet.

IV. CONCLUSIONS

From the above results, it clearly shows that Google advanced patent search optimizes the iterations and gives instant prior art result whereas espacenet takes more iterations and refining of keywords are necessary such that it gives relevant prior art result .Its not only the result but also the keyword covers the concept correctly. Hence Google Advanced Patent search is better database than Esapcenet.

REFERENCES

[1] Michel, J., Bettels, B., , Patent citation analysis: A closer look at the basic input data from patent search reports, Scientometrics, vol.51 no.1: 185-201.April 2001
[2] Karki M.M.S.,, Patent Citation Analysis: A Policy Analysis Tool, World Patent Information, vol19,no.4,pp269-272. June1997
[3] Tseng, Y.-H., Lin, C.-J., Lin Y.-I. Text mining techniques for patent analysis, Information Processing and Management: an International Journal, 43/5: 1216-1247,Feb 2007
[4] Yoon, B., Park, Y., A text-mining based patent network: Analytical tool for high-technology trend, Journal of High Technology Management Research, 15: 37-50.June 2003
[5] Wu, M.-C, Lo, Y.-F., Hsu, S.-H., 2006, A case-based reasoning approach to generating new product ideas, The International Journal of Advanced Manufacturing Technology, 30: 166-173. [10]Yoon, B., Park, Y., May 2005,
[6] Cascini, G., Russo, D., 2007, Computer-Aided Analysis of Patents and Search for TRIZ Contradictions, International Journal of Product Development, 4/1-2: 52-6Nov 2007.



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IMPACT FACTOR: 7.429

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