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# PATENT PROTECTION FOR ARTIFICIAL INTELLIGENCE IN EUROPE

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## ABSTRACT

Every day, millions of people all around the globe participate in social networking sites. The way people use social media sites like Facebook and Twitter may greatly affect their everyday lives, sometimes in negative ways. Now more than ever, spammers are targeting popular social networking sites as a means to spread an overwhelming quantity of harmful and useless content. For material have grown in number due to the greater likelihood of consumers being exposed to inaccurate information via false identities. An increasingly instance, due to its meteoric rise to prominence, Twitter now permits an absurd quantity of spam. In an effort to promote businesses or websites that both harm genuine users and disrupt resource use, fake users send unwanted tweets to users. Additionally, those outcomes in the

unrolling of hazardous popular topic of study in modern online social networks (OSNs) is the detection of spammers and the identification of fraudulent Twitter users. We examine methods for identifying Twitter spammers in this research. In addition, a taxonomy of Twitter spam detection methods is offered, categorizing the approaches according to their capacity to identify: (i) false content, (ii) spam inside URLs, (iii) spam within popular subjects, and (iv) false accounts. You may compare the offered strategies using a number of factors, including user, content, graph, structure, and temporal aspects. We are optimistic that this study will serve as a valuable tool for scholars looking for a consolidated overview of the most current advancements in Twitter spam identification. In order to increase the possibility of patent entitled of artificial

intelligence related inventions at the European Patent Office, applications should focus on what technical problems the invention is solving or identify the specific technical improvements. From the perspective of patent analysis, European artificial intelligence technology is leading the world and, in this field, the European Patent Office is one of the most important intellectual property offices, and its legislation and practice of patent eligibility examination for artificial intelligence related Inventions have an important impact on the world. the European Patent Office takes the position in the Guidelines that artificial intelligence and machine learning technologies are based on mathematical methods and are therefore generally excluded from patent eligibility unless linked to a technical application. The updated Guidelines did not make substantial changes to the technical requirements of the patent eligible subject, but only further clarified and refined it.

## 1.INTRODUCTION

Artificial intelligence (AI) is one of the main technologies of the Fourth Industrial Revolution (4IR). “Artificial Intelligence heralds dramatic potential for growth for

both the economy and for humans.” Mark Purdy, Accenture. Recent years, major countries in the world have systematically deployed artificial intelligence on the strategic level. For example, the “National Artificial Intelligence Strategy” issued by the French government in March 2017. The Japanese government promulgated the “Report of Strategic Council for AI Technology” in March 2017. In October 2016, the United States promulgated the National Strategic Plan for Research and Development of Artificial Intelligence. On June 21, 2019, the White House released an updated version of the National Artificial Intelligence R&D Strategic Plan. The German government issued the "Federal Government Artificial Intelligence Strategy Essentials" in July 2018. In July 2017, China promulgated the "New Generation Artificial Intelligence Development Plan". The AI revolution has brought unprecedented challenges to today's ethical standards, legal rules, social order and public management systems. In terms of Patent law, the main challenge is the patent eligibility of the artificial intelligence invention. On May 30, 2018, the European Patent Office (EPO) hosted the first conference on patenting Artificial Intelligence. More than 350

representatives of industry, academia, user associations, patent law firms, the judiciary, national patent offices and government bodies gathered in Munich to discuss the challenges and Opportunities of "Patenting AI" at the EPO's conference.

In Europe, in addition to filing patent applications in national patent offices, applicants may file an application for a European Patent at the EPO. The EPO is an intergovernmental organization that was set up on 7 October 1977 on the basis of the European Patent Convention (EPC) signed in Munich in 1973. The EPC is a regional patent system that provides uniform patent protection in all member and extension states and that co-exists with national patent systems. It has two bodies, the European Patent Office and the Administrative Council. The European Patent Office, the executive arm of the European Patent Organization, offers inventors a uniform application procedure which enables them to seek patent protection in up to 44 countries. The Office is supervised by the Administrative Council. Besides granting European patents, the EPO is also in charge of establishing search reports for national patent applications on behalf of the patent offices of France, Netherlands, Belgium,

Luxembourg, Italy, Turkey, Greece, Cyprus, Malta, San Marino, Lithuania, Latvia and Monaco.

The European Patent Organization currently has 38 member states which are Belgium, Germany, France, Luxembourg, Netherlands, Switzerland, United Kingdom, Sweden, Italy, Austria, Liechtenstein, Greece, Spain, Denmark, Monaco, Portugal, Ireland, Finland, Cyprus, Turkey, Bulgaria, Czech Republic, Estonia, Slovakia, Slovenia, Hungary, Romania, Poland, Iceland, Lithuania, Latvia, Malta, Croatia, Norway, North Macedonia, San Marino, Albania and Serbia. Additionally, European patents are recognized in two European extension states which are Bosnia and Herzegovina and Montenegro, and four validation states which are Morocco, Republic of Moldova, Tunisia and Cambodia. The European procedure has not superseded the national grant procedures. The EPO provides a single patent grant procedure, but not a single patent from the point of view of enforcement. Hence the patents granted are not European Union patents or even Europe-wide patents, but a bundle of national patents. When seeking patent protection in one or more EPC contracting states patent applicants have a

choice between following the national procedure in each state for which they want protection and taking the European route, which in a single procedure confers protection in all the contracting states that they designate.

There is a long-standing debate on the impact of intellectual property (IP) rights on innovation and economic development.<sup>1</sup> One of the most controversial questions revolves around the strength of patent protection in lower- and middle-income economies. Underlying this debate is the fact that countries have the ability to individually determine important aspects of their IP rights systems. Although there are international agreements such as the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) which harmonize and regulate important aspects of national IP systems,<sup>2</sup> there is no global patent system,<sup>3</sup> and only a few regional systems.<sup>4</sup> This fact means that patents are national rights and thus valid only in the jurisdiction that grants them. This in turn implies that regardless of the strength of statutory patent protection, the same invention may be patent-protected in one jurisdiction but not in another. Hence, apart from the availability and strength of patent

protection, the need to file patents on the same invention in each country for which patent protection is sought is likely to affect companies' decisions about where to obtain patent protection and therefore their business decisions including R&D, foreign direct investment (FDI), exporting, etc. It is also likely to affect business decisions of companies other than the patentees, especially those in lower- and middle-income economies.

The fragmented nature of patent protection also raises a number of other issues. First, there are doubtless a great deal of wasted resources when patent applications on the same invention need to be examined in several different offices, to say nothing of issues related to enforcement in different jurisdictions. To some extent this problem is mitigated by the Patent Cooperation Treaty (PCT) which allows a single search for prior art by one of the designated international search offices.<sup>5</sup> However, for developing countries the creation of a patent office and the acquisition of the expertise required to grant patents may use resources that would be better spent elsewhere. For this reason, regional offices may be a desirable and cost-effective solution for smaller and less

developed countries. A second problem created by the existence of many national patent offices is that the same invention may result in patents of widely varying breadth, which can raise enforcement and other costs for both the patent holder and her competitors. A regional office could lead to more uniformity of coverage across jurisdictions. In this paper, we examine empirically the response of firms and inventors to the addition of a regional patent system to their own national system, in an effort to understand how it affects both their innovative activity and their patenting strategies. We use data for a set of 14 countries that joined the European Patent Convention (EPC) during the 2000–2010 decade to explore the impact of the accession on patenting behavior by firms in those countries.<sup>6</sup> The EPC is a regional patent system that provides uniform patent protection in all member and extension states and that co-exists with national patent systems. It offers a single route to obtaining a patent grant in all member and extension states. Accession to the EPC, therefore, offers an interesting setting to study the effect of the introduction of a regional patent system. The period that we study is particularly interesting because a number of

relatively less developed transition and emerging market economies joined the EPC regional patent system which had been mainly composed of more advanced EU countries.

Joining the EPC potentially has two main effects. First, it becomes cheaper for residents to simultaneously obtain patent protection both domestically and in the other countries signatory to the EPC. Second, it also becomes cheaper for foreigners to obtain patent protection in the country as they can obtain an EPC patent in the country instead of filing a separate patent application with the national office of the country. This implies that on the one hand, it becomes cheaper for domestic firms to obtain patent protection at home and abroad simultaneously, and on the other, it becomes cheaper for foreign firms to obtain patent protection in the country provided they obtain patent protection in another country signatory to the EPC.<sup>8</sup> Using both aggregate and applicant level data, we investigate how European Patent Office (EPO) and national office patenting by residents and non-residents of accession countries change following accession to the EPC. We also carry out some analysis that looks at whether



lowering the cost of broad patent coverage increases patented invention in the country.

Our analysis offers three main insights. First, there is little evidence for a drop in patent filings by domestic entities with the national office following accession. That is, entities in accession countries do not substitute filings at the EPO for domestic filings. That said, in nearly all accession countries, domestic entities filed very few patents with the national office before accession and accession did not change that. Second, we nevertheless see a modest increase in EPO filings by domestic entities albeit from a very low level. Analysis at the inventor level suggests that invention does increase slightly (and slowly) in the accession countries. We also find some evidence for an increase in the complexity of the patent landscape in accession countries due to the (unexpected) combined use of the national and EPC systems for the same patents. Third, foreign entities react strongly to accession to the EPO. Filings with national offices by foreign entities drop by over 90% immediately following accession to the EPC as they opt for filings at the EPO instead of the domestic patent office.

Our analysis contributes to the literature by providing evidence on the effect of the

national character of patents as well as the introduction of a regional patent system. Because most accession states were lower and middle-income economies, our results also provide some insight into the impact of such international patent systems on developing countries in the rest of the world. As in the case of patent systems more broadly, the positive impact of patents on invention in lower- and middle-income countries is likely to be very small.

From a policy point of view, our analysis may in particular provide lessons for developing countries that consider joining the PCT- system or other supra-national systems. By facilitating the filing of patents in several jurisdictions, joining the PCT system generates similar effects to joining the EPC system. Our analysis may also inform us about the potential impact of the European patent with unitary effect in 25 countries (that are part of the enhanced cooperation agreement) which is scheduled to become available in 2019.<sup>10</sup> Under the agreement, validation of the European unitary patent in a national office is no longer required for the patent to enter into force. Our results suggest that this will lead to a sudden and persistent increase in the number of valid European patents in

countries that so far recorded few validations of EPO patents. Further, the co-existence of the existing national and EPO systems with the new unitary patent during a transitional period of at least seven years may result in a substantial number of duplicate patent filings across the different systems. This will increase the complexity of the European patent landscape even further. Overall, given the expected costs savings in obtaining patent protection across several European countries due to the unitary patent, the effect may materialize in a similar way as what occurred after accession to the EPC.

## 2. EXISTING SYSTEM

The existing system The European procedure has not superseded the national grant procedures. The EPO (European Patent Office) provides a single patent grant procedure, but not a single patent from the point of view of enforcement. Hence the patents granted are not European Union patents or even Europe-wide patents, but a bundle of national patents. When seeking patent protection in one or more EPC contracting states patent applicants have a choice between following the national procedure in each state for which they want protection and taking the European route,

which in a single procedure confers protection in all the contracting states that they designate.

## DISADVANTAGES OF EXISTING SYSTEM:

- Inventions the commercial exploitation of which would be contrary to "ordre public" or morality; such exploitation shall not be deemed to be so contrary merely because it is prohibited by law or regulation in some or all of the Contracting States.
- Plant or animal varieties or essentially biological processes for the production of plants or animals; this provision shall not apply to microbiological processes or the products thereof.
- **Algorithm:** Apriori algorithm.

## 3. PROPOSED SYSTEM

In this proposed approach a pure mathematical method is excluded from patent eligibility under EPC Art. 52(2)(a). If an AI-related invention is directed to a purely abstract mathematical method and the invention does not require any technical means, the invention is not patent eligible.



If an AI-related invention is directed either to a method involving the use of technical means (e.g. a computer) or to a device, its subject matter has a technical character as a whole and is thus not excluded from patent eligibility under Art. 52(2) and. However, merely specifying the technical nature of the data or parameters of the mathematical method may not be sufficient to define a technical character, as the resulting method may still fall under the excluded subject-matter of methods for performing mental acts as such (Art. 52(2)(c) and (3), G-II).

### **ADVANTAGES OF PROPOSED SYSTEM:**

- When assessing the contribution of mathematical methods to the technical character of an invention, it must be considered whether the method is used for technical purposes in the context of the invention.
- When an AI-related invention is directed to a particular technical implementation of a mathematical method, the mathematical method can also contribute to the technical character of the present invention independently of any technical application, and the mathematical

method is particularly suited to the implementation, as its design is technical considerations of the internal functions of the computer.

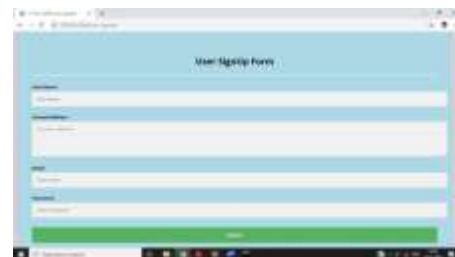
- **Algorithm:** nlp cosine similarity.

## **4. OUTPUT SCREENS**

### **Home Page**



### **User Registration Page**



### **Admin login**



### **Admin Home Page**



**Admin View Registered Users**



**User Login**



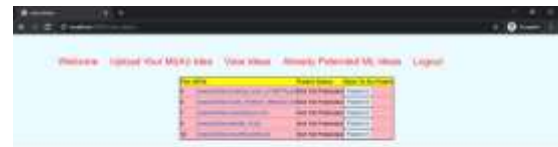
**User Home Page**



**Upload a File**



**View Ideas**



**Results**



**Server Side Code**



**Patents Files**



### Admin View Files



## 5. CONCLUSION

In summary, the EPO takes the position in the guidelines that AI and ML technologies are based on mathematical methods and are therefore generally excluded from patent eligibility unless linked to a technical application. The updated EPGL did not make substantial changes to the “technical” requirements of the patent eligible subject, but only further clarified and refined it. Whether the new EPGL will make patenting AI inventions easier in the EPO is? difficult to say yet. At least, a window has been opened.

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