USE OF ARTIFICIAL INTELLIGENCE BY IP REGISTRIES

EMERGING ISSUES COMMITTEE

ARTIFICIAL INTELLIGENCE AND DECISIONS BY MACHINES SUBCOMMITTEE

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1. INTRODUCTION

The role of the INTA Emerging Issues Committee is to scan the horizon for possible upcoming issues that have yet to be considered by INTA, and to determine whether the Association should be taking a closer look at any, or all, of the issues identified. As part of this work, the Artificial Intelligence and Decisions by Machines Subcommittee studied the adoption by Intellectual Property (IP) registries of artificial intelligence (AI) to better understand how AI is currently being used and consider the extent to which the adoption of AI might expand in future.

The Subcommittee collected information from a range of IP registries via a short questionnaire[1], and is grateful to the nine that responded to share their internal practices (Australia, Chile, China, European Union, Japan, Norway, Russian Federation, Singapore and U.S.A.).

The questionnaire asked registries to provide details of the AI solutions that they had adopted (or were considering adopting), and to detail what effect the implementation of these solutions had on their work. Registries were also asked to consider how implementation of these AI solutions affected (or would affect) the work of their examiners, other staff within their office, and trademark professionals interacting with their offices.

This data set was supplemented by information already provided to the World Intellectual Property Organization (WIPO) by each of the nine registries from March to May 2018. (See WIPO Index of AI Initiatives in IP Offices https://www.wipo.int/about-ip/en/artificial_intelligence/search.jsp).

The following sections of this report summarize the findings of this exercise. Sections 2 and 3 examine the effect the implementation of AI solutions has had on trademark searching and trademark examination, respectively. Section 4 discusses feedback received from trademark professionals.

2. THE EFFECT OF AI ON TRADEMARK SEARCHING

Many of the registries that responded to the questionnaire are in the early stages of adopting AI solutions. Of the nine respondent registries, five registries are still developing trademark image search systems, which incorporate AI. These registries are using databases of figurative trademarks and previous search results to train their search systems, with the search results being subject to evaluation and review by trademark examiners. Examiner feedback is then used to further improve the algorithms underlying the AI.

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[1] See Appendix.

According to INTA's survey and the WIPO AI Index, registries in the developmental stages were hopeful that the incorporation of AI in their search systems would enhance search processes such as: (a) recognizing non-abstract elements, which enables the finding of conceptually similar yet visually dissimilar marks; (b) finding conceptually similar words and devices from words of different languages; and (c) assisting in mark segmentation such that individual elements within a composite mark could also be searched for.

Four registries reported that they already are actively using AI-assisted public trademark image searching; these being the Australian, Chinese and Norwegian registries, and the European Union Intellectual Property Office (EUIPO). The Australian and Norwegian registries, and EUIPO are using commercially available software tools, which incorporate AI for their trademark image searching functions, as follows:

- Australia -- uses TrademarkVision Image Recognition software and another tool called Trade Mark Assist (TM Assist), which is designed to help customers explore their proposed trademarks;

- Norway -- uses a software product called Acsepto; and

- EUIPO -- uses Computer Vision for analysis of images, image recognition, image comparison, and text recognition. This feature is currently available in the EUIPO website in searches for similar figurative trademarks and designs. EUIPO uses a third-party solution made available to the public through the eSearch Plus tool: https://euipo.europa.eu/eSearch/.

The Chinese registry launched a Smart Trademark Search function in January 2019, but it is not clear if this system uses commercially available tools or if it is a bespoke system. Use of AI in China is still at a very early stage. However, the registry is already reporting improved search efficiency and a reduction in the inconsistent application of human judgement.

The Australian registry has implemented AI tools to support public trademark searches and augment both the application and examination process. The TM Assist tool leverages AI to propose trademark classes based on a customer's business in addition to providing image search capabilities. A virtual assistant deployed on the Australian registry's corporate website incorporates machine learning to provide information to customers, including trademark applicants, 24 hours a day.

The Norwegian registry reported that the use of AI-assisted trademark searching had improved the quality of the trademark applications they received, which in turn increased the probability of successful trademark registrations.

EUIPO found that trademark professionals were successfully making use of AI-assisted image searching to ascertain if there were any similar registered trademarks before they submitted a new application. EUIPO has plans to provide trademark professionals with better support while choosing trademark classes to help them categorize goods or services correctly and hence get desired protection. Trademark professionals should get more predictability on the applications submitted by means of the AI-powered support tools that are and will be made available. This should lead to a higher customer satisfaction and improved stakeholder relationships.

It is clear from the questionnaire responses that human review of AI-assisted search results is invaluable particularly in the development stage, where feedback is used to fine-tune the underlying algorithms. However, human feedback remains important in the implementation phase to ensure that AI search tools continue to be effective.

3. THE EFFECT OF AI ON TRADEMARK EXAMINATION

Among the responding offices, use of AI in the examination of trademarks varies significantly. While certain offices did not provide any information in this regard (e.g. Chile, Japan and the UK), others have invested and continue to invest a considerable amount of resources to develop, test and implement AI-based examination tools. In general, the use of AI in trademark examination

seems to be primarily motivated by the interest in improving consistency in decisions and optimizing management of examiners' workload.

With respect to harmonization or increasing consistency of decisions, EUIPO has been using some internal tools (helpers) powered with AI to group trademarks to be evaluated by the same examiner. AI is being used to extract relevant information from letters and make decisions based on this information; applying this technique to Absolute Grounds and Relative Grounds deficiency, and decisions letters.

The Norwegian Trademark Office is planning to use client-trained robots to search web sources. It is unclear whether the intention is to use such tool to determine the distinctiveness of wordmarks, which according to WIPO, is something in the course of implementation by the Singapore Intellectual Property Office, where the so-called "Distinctiveness Checker" will use machine learning to automatically measure the distinctiveness of a given word mark and also to suggest evidence for the measurement.

Trademark searches seem to be in many instances the natural starting point for the application of AI in the trademark examination process, again, with the purpose of increasing examination efficiency and consistency. In China, the "Smart Trademark Search" function allows the use of AI to transform trademark examination work from manual searches to smart "search by image" searches.

The Australian IPO uses Natural Language Processing, and Deep Neural Networks for text and image analysis. As indicated in the WIPO database, the Australian IPO developed a Smart Assessment Toolkit; a collection of advanced models designed to support trademark examination and predict objections. The Smart Assessment Toolkit uses a combination of natural language processors and internally developed software trained by a dataset of historic adverse reports from 2008 to 2016 to detect similar existing trademarks. Once trained, it provides high ranking results to the user.

The USPTO's AI program, as described in the WIPO information, includes improvements for trademark operations in the following areas: 1) developing a quality review smart form with analytics; 2) ingesting office actions on the big data reservoir with advanced analytics including usage and descriptive statistics; and 3) determining the efficacy of deep machine learning for image searching for trademarks.

4. FEEDBACK FROM TRADEMARK PROFESSIONALS

The question of the impact of AI use by trademark offices on trademark professionals is naturally an ambiguous one that requires primarily speculation for an answer (as the final examination of this issue will depend on the further integration of this technology on such institutions). As such, only EUIPO, Norway IPO and USPTO provided an answer to this question while Chile, China, Russia, Singapore and Australia did not.

EUIPO emphasized the increased availability of useful tools to both examiners and practitioners alike, such as image searching, goods and services description and classification tools, and even a tool to forecast the likely outcome of any particular application.

Norway IPO anticipates improved quality in the examination of applications, as well as tools to increase the efficiency of both application preparation and examination. USPTO expects that its stakeholders and the American public will increase their confidence in USPTO's ability to examine fairly and more effectively, thereby reducing *ex parte* examination appeals to only the most legally justified cases to appeal.

While the Australian Trademark Office did not expressly answer this question, some of the questions they did answer suggest a significant improvement in the allocation of resources aimed to introduce better solutions through AI, primarily in the area of responding to stakeholder inquiries. The Office reported that its AI system, known as "Alex," is now dealing with about 40% of customer interactions which has reduced the number of calls that a live representative had to field from 12,000 calls per month to 5,000 calls per month over a period of two and a half years.

The Australian Trademark Office has also since May 2019 offered the customer facing Trade Mark Assist interface. The interface integrates the Alex Ai system and actively walks a user through the process of selecting their trademark and the drafting of the specification of goods and services via a machine learning algorithm. It also conducts a trademark search for the customer and ultimately generates a completed trademark application which is capable of being filed. In Australia approximately two thirds of domestic filers are unrepresented so this system has been designed to improve their outcomes in the trademark process whilst also no doubt reducing the examination burden on the trademarks office.

The involvement of AI directly in the examination process in Australia has only been officially operational since approximately November 2018. While the system has thrown up a few anomalies for trademark practitioners, the handling of more menial tasks such as changes of addresses and minor formality issues has certainly benefited from its implementation and such actions are often resolved quickly.

Given these facts, it can extrapolated that the impact of AI on trademark professionals (including professionals at the trademark office) could most likely and commonly experience is an increase in confidence among stakeholders that the trademark office will examine applications both efficiently and correctly, resulting in a more satisfying examination outcome. This should further result in an improvement in the relationship between trademark offices and their stakeholders. Moreover, as a new technology, AI will invariably result in myriad additional tools and resources available to and desired by all trademark practitioners. Consequently, just like the public welcomes the development of a market for any highly coveted, useful new item, so too will the public be impacted positively by and adapt favourably to the new technology.

5. CONCLUSION

The use of AI by IP registries is gaining prevalence. AI technologies are beginning to be implemented in trademark searching, trademark examination and stakeholder interactions with the aim of improving the efficiency and consistency of the handling and processing of trademark registrations. As implementation of AI solutions by many of the respondent registries is in the early stages, the full extent of the possibilities is not yet clear with developments still being explored. Nevertheless, from the responses received, the trend among IP registries appears to be towards positive engagement with AI solutions, embracing and exploring the possibilities that artificial intelligence may provide in the prosecution and registration of trademarks.

AI solutions should be seen as tools to aid the trademark professional, in that they can be deployed to increase the efficiency of the examination process and to achieve greater consistency in decision-making. The rollout of AI solutions in the searching and examination process allows for the involvement of trademark professionals to be focused on more complex issues, with AI technologies offering efficient solutions for more menial tasks. For brand owners, as the various AI solutions are developed, the future should include greater predictability, improved outcomes, increased stakeholder confidence and overall lower prosecution costs.

AI solution implementation and uptake remains in development for many IP registries, and the use of AI by registries varies significantly. There is clear appetite among registries for the exploration of new technologies. To be sure, the technological landscape of trademark registration will develop at a faster pace the very near future, and become an indispensable tool for IP registries and trademark professionals alike.

APPENDIX

INTA QUESTIONNAIRE
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USE OF ARTIFICIAL INTELLIGENCE BY IP REGISTRIES

Name of Registry:	
Contact Person at Registry: (including position and scope of role)	
What type of artificial intelligence/ machine learning (AI) software solutions has your office adopted?	
Have you adopted or considered adopting AI solutions to assist with the following aspects of trade mark work: - Public trademark searches (e.g. providing AI solutions for searchable databases) - Trademark applications (e.g. auto-filling applicant information, suggesting classes, correcting product/service descriptions, etc.) - Trademark examination (e.g. AI solutions for examiners in searching for prior marks, prior TMO decisions, ensuring compliance with local registration requirements) - Issuing administrative or legal rulings on registration and on appeals	
How do you think implementing AI has affected or will affect the work of your examiners?	
How do you think implementing AI has affected or will affect the work of other TMO staff?	
How do you think implementing AI has affected or will affect the work of trademark professionals interacting with your office?	
Are or will the AI results be reviewed by a human?	