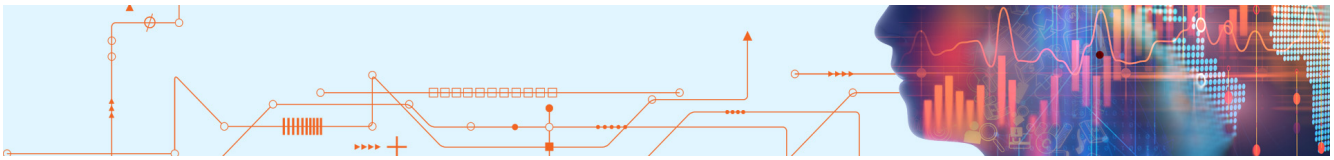

AI in Focus - Natural Language Processing

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The next application of Artificial Intelligence (AI) to be examined in our *AI in Focus* series is in the area of natural language processing (NLP). The CIPO report on *Processing Artificial Intelligence: Highlighting the Canadian Patent Landscape* shows that NLP related patent applications are the most prevalent type of AI specialization in both Canada and the U.S.[1]

One of the challenges of patenting an NLP related invention is overcoming a critical hurdle of patentability, namely whether the claimed invention is considered to be patentable subject matter. In Canada, patent examiners use a problem/solution approach to determine whether computer components are essential to a claimed invention and, if so, then the claimed invention is considered to be patentable subject matter.[2] In the U.S., patent examiners determine whether a claim is directed to an abstract idea using a two-prong approach and, if so, whether the claim contains "significantly more" than the excluded concept.[3] In Prong One, the examiner determines whether the claim "recites" an abstract idea; in Prong Two, the examiner determines whether the abstract idea is integrated into a practical application.[4]

In Canada, when a patent applicant is unable to convince a patent examiner that their invention is directed to patentable subject matter, they can appeal the Examiner's position to the Patent Appeal Board (PAB). Two decisions by the Canadian PAB are particularly insightful.

In a first case, a patent application in the name of Fair Isaac Corporation related to automated methods and systems to detect fraudulent financial transactions, particularly in the use of credit cards.[5] The PAB found that the role of the computer in claim 1 was primarily to perform neural network calculations in an expeditious and efficient manner. The PAB found that while the computer implementation provided a convenient working environment for the method to operate, it was not material to the solution. The PAB concluded that the computer implementation in the method of claim 1 was not an essential element and the claimed invention was not patentable subject matter.

In a second case, a patent application in the name of Xerox Corporation related to the prediction of user demographic information based on an analysis of a pattern of web pages accessed by a user.[6] The PAB found that the rules of an improved algorithm for analyzing the data and predicting user demographic information were the essential elements of the claims and that a computer was not among the essential elements. The PAB noted that the solution did not lie in the computerized gathering or processing of data and the claimed invention was not patentable subject matter.

In the U.S., a patent applicant can appeal to the Patent and Trademark Appeal Board (PTAB). Two decisions by the U.S. PTAB are insightful.

In a first case, a patent application in the name of eBay described a conversational agent designed to simulate a conversation with a user to gather listing information.[7] The PTAB found that the claims were directed to the judicial exception of providing shopping support, which was considered to be an abstract idea. The PTAB determined that the claims did not contain "significantly more" than the excluded concept because the claimed conversational agent was not limited to implementation by complex trained artificial intelligence algorithms and accordingly that the invention was not patentable subject matter.

After the PTAB rendered its decision, the applicant amended its claims twice with additional limitations. The examiner then allowed the claims because the prior art did not teach or suggest that the additional limitations were well-known, routine, and conventional. In particular, these limitations included receiving, via a GUI, an upload of at least one image to be posted with posting information, and automatically posting by generating a posting by combining the posting information with

information received from the user via the GUI including at least one image.

In a second case, a patent application in the name of IBM covered data processing and mechanisms for iterative deepening knowledge discovery using time-weighted closures based on dimensions of evidence.[8] The PTAB found that the claims recited an abstract idea of generating candidate answers to a question (using the first prong). However, the PTAB also determined that the abstract idea was integrated into a practical application, as it recited a set of steps for a particular query- and hypothesis-based processing sequence and set of rules to improve the technology of question answering systems. Accordingly the invention was considered to be patentable subject matter.

The lessons to be learned for applicants wishing to patent NLP related inventions in Canada and the U.S. is that patent claims relating to mere improvements to algorithms generally do not meet the test for patentable subject matter. However, claims reciting (1) computerized data gathering, processing, and outputting; or (2) steps for a processing sequence to improve the technology of particular NLP related systems have a better chance of doing so.

This has been the fourth article in our *AI in Focus* series. You can read the first three articles here:

- AI in Focus – Autonomous Vehicles
- AI in Focus – Fundamental Artificial Intelligence and Video Games
- AI in Focus – Robotics

If you have any ideas for other topics that you would like us to cover in our next article in this series, please email Isi Caulder, Co-Leader of the Artificial Intelligence (AI) practice group at Bereskin & Parr LLP.

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1 Canadian Intellectual Property Office (CIPO), *Processing Artificial Intelligence: Highlighting the Canadian Patent Landscape*, available at https://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr04755.html.

2 See, e.g., Isi E. Caulder and Nicholas Aitken, Bereskin & Parr LLP, *Pulling Out All The Stops - Patenting Computer Implemented Inventions In Canada Despite Unprecedented Obstacles*, available at https://www.mondaq.com/canada/Intellectual-Property/458794.

3 See, e.g., Paul Horbal, Bereskin & Parr LLP, *USPTO Revises Patentable Subject Matter Guidelines to Start 2019*, available at https://www.bereskinparr.com/doc/uspto-revises-patentable-subject-matter-guidelines-to-start-2019.

4 See, e.g., USPTO, *October 2019 Update: Subject Matter Eligibility*, available at https://www.uspto.gov/sites/default/files/documents/peg_oct_2019_update.pdf.

5 *Re Fair Isaac Corporation Patent Application No. 2,144,068*, Commissioner's Decision 1339, available at https://www.ic.gc.ca/opic-cipo/comdec/eng/decision/1339/summary.html.

6 *Re Xerox Corp. Patent Application No. 2,409,631*, Commissioner's Decision 1462, available at https://www.ic.gc.ca/opic-cipo/comdec/eng/decision/1462/summary.html.

7 *Ex parte Joerg Mitzlaff*, Appeal 2016-003447, Application 12/019,128, available at https://e-foia.uspto.gov/Foia/RetrievePdf?system=BPAI&flNm=fd2016003447-03-27-2018-1.

8 *Ex parte Aaron K. Baughman, Gary F. Diamanti, Mauro Marzorati, and Elizabeth M. Valletti*, Appeal 2019-000665, Application 14/623,292, available at https://e-foia.uspto.gov/Foia/RetrievePdf?system=BPAI&flNm=fd2019000665-09-25-2019-0.