



PATENTS ACT 1977

APPLICANT	Kira Inc.
ISSUE	Whether patent application GB1713282.0 complies with section 1(2) of the Patents Act 1977
HEARING OFFICER	J Pullen

DECISION

Introduction

- 1 Patent application GB1713282.0 entitled 'System and method for identifying passages in electronic documents' was filed on 18 August 2017 claiming a priority date of 25 August 2016. It was published as GB 2555207 A on 25 April 2018.
- 2 On 15 January 2018 the examiner issued a combined search report and abbreviated examination report under sections 17(5)(b) and 18(3) of the Patents Act 1977 ("the Act") explaining how, in his opinion, a search would serve no useful purpose as the claimed invention was excluded from patentability as a program for a computer as such. There followed several communications between the examiner and the applicant's agent, Freddie Noble of Albright IP, but no agreement was reached in relation to the excluded matter objection. No amendments have been made to the application since its initial filing.
- 3 On 22 October 2020 the examiner offered to pass the application to a hearing officer for a decision, and on 24 November 2020 the applicant's agent requested a decision be made based on the papers already on file.
- 4 The only matter before me is whether the invention is excluded from patentability under section 1(2)(c) of the Act as a program for a computer as such. This is also the only issue that has been examined to date. If I find that the claimed invention is not excluded from patentability, I will need to remit the application back to the examiner to perform a search and complete the substantive examination.
- 5 I confirm that in reaching my decision I have considered all documents on file.

The invention

- 6 The invention relates to searching through an electronic text document for passages relating to a desired concept by using a conditional random field algorithm (a class of statistical modelling). A set of training texts are deconstructed by a computer

processor to extract features including the text of complete sentences, tokens used in those sentences, the sequencing of those sentences, and the layout and typography of the text. The conditional random field algorithm applies one of two labels to each sentence: relevant to the concept being searched for (also known as "State A"), or background information ("State B"). A search algorithm then returns all those sentences which have been labelled with "State A", i.e. those sentences relevant to the concept being searched for.

7 There are two independent claims: method claim 1 and system claim 9. These claims relate to different aspects of the invention, but the underlying inventive concept is the same and the claims will therefore stand or fall together.

8 Independent claim 1 reads as follows:

A method for searching an electronic document for passages relating to a concept being searched for, where the concept is expressed as a word or plurality of words, the method comprising:

deconstructing by a computer processor training electronic texts stored on a computer readable into a stream of features;

storing the stream of features in a data store; wherein the features include the text of complete sentences, tokens used by the text in each sentence, the sequence of sentences, layout of text and typography of text;

executing by a computer processor a conditional random field algorithm to label sentences in the electronic document as either being relevant to the concept being searched for ("State A") or as background information ("State B") based on the stream of features;

executing by the computer processor a search algorithm which returns those sentences labelled as State A.

9 Independent claim 9 reads as follows:

A system for searching an electronic document for passages relating to a concept being searched for, where the concept is expressed as a word or plurality of words, the system comprising:

a computer processor deconstructing training electronic texts stored on a computer readable into a stream of features;

a data store storing the stream of features; wherein the features include the text of complete sentences, tokens used by the text in each sentence, the sequence of sentences, layout of text and typography of text;

wherein the computer processor executes a conditional random field algorithm to label sentences in the electronic document as either being relevant to the concept being searched for ("State A") or as background information ("State B") based on the stream of features;

and wherein the computer processor executes a search algorithm which returns those sentences labelled as State A.

The law

- 10 The examiner has objected that the invention is excluded from being patented as a program for a computer as such. The relevant section of the Act is section 1(2), the most relevant provisions of which are (emphasis added):

*It is hereby declared that **the following** (among other things) **are not inventions** for the purposes of this Act, that is to say, **anything which consists of—***

(a) ...;

(b) ...;

*(c) a scheme, rule or method for performing a mental act, playing a game or doing business, or a **program for a computer**;*

(d) ...;

*but the foregoing provision shall prevent anything from being treated as an invention for the purposes of this Act only to the extent that a patent or application for a patent relates to that thing **as such**.*

- 11 The Court of Appeal has said that the issue of whether an invention relates to subject matter excluded by section 1(2) must be decided by answering the question of whether the invention reveals a technical contribution to the state of the art. In *Aerotel/Macrossan*,¹ the Court of Appeal set out the following four-step approach to help decide the issue:

(1) Properly construe the claim

(2) Identify the actual contribution

(3) Ask whether it falls solely within the excluded subject matter

(4) Check whether the actual or alleged contribution is actually technical in nature

- 12 The operation of the approach is explained at paragraphs 40-48 of the judgment. Paragraph 43 confirms that identification of the contribution is an exercise in judgment involving the problem said to be solved, how the invention works and what its advantages are; essentially, what it is the inventor has really added to human knowledge, looking at substance, not form. Paragraph 47 adds that a contribution which consists solely of excluded matter will not count as a technical contribution.
- 13 In *Symbian*² the Court of Appeal reaffirmed the *Aerotel* approach while considering a question of “technical contribution” as it related to computer programs emphasising the need to look at the practical reality of what the program achieved, and to ask whether there was something more than just a “better program”.

¹ *Aerotel Ltd v Telco Holdings Ltd (Rev 1)* [2006] EWCA Civ 1371, [2007] RPC 7 [40]-[49]

² *Symbian Ltd v Comptroller General of Patents* [2008] EWCA Civ 1066, [2009] RPC 1

14 The case law on computer implemented inventions was further elaborated in *AT&T/CVON*³ which provided five helpful signposts to apply when considering whether a computer program makes a relevant technical contribution. In *HTC v Apple*,⁴ Lewison LJ reformulated the fourth of these signposts. The signposts are:

(i) whether the claimed technical effect has a technical effect on a process which is carried on outside the computer;

(ii) whether the claimed technical effect operates at the level of the architecture of the computer; that is to say whether the effect is produced irrespective of the data being processed or the applications being run;

(iii) whether the claimed technical effect results in the computer being made to operate in a new way;

(iv) whether the program makes the computer a better computer in the sense of running more efficiently and effectively as a computer;

(v) whether the perceived problem is overcome by the claimed invention as opposed to being merely circumvented.

15 As Mr Noble details in his letter dated 2 October 2018, the case law makes clear that these signposts are merely guidelines and were not intended to provide a definitive test; there will be some cases in which they are more helpful than in others.⁵

Assessment

Step 1: Properly construe the claims

16 In his letter of 26 August 2020 (paragraphs 2 and 3), Mr Noble highlighted that the scope of the term “electronic document” had not been specifically addressed so far, and suggested that this term should be construed as limited to “an electronic text document in a human-readable natural language”. Indeed, Mr Noble acknowledged that “this has probably been an unstated assumption on both sides and will not be in serious dispute”. In his most recent report dated 22 October 2020, the examiner agreed although did not consider this construction to change the substance of the contribution made by the claimed invention. I agree that the skilled person considering the claims in light of the description would construe the term “electronic document” as suggested by Mr Noble.

17 While the examiner and Mr Noble appear to agree that independent claims 1 and 9 are otherwise clear, I believe several other aspects of the claims merit brief clarification.

18 The ‘deconstructing’ clause reads “deconstructing by a computer processor training electronic texts stored on a computer readable into a stream of features”. There appears to be a word missing from this clause, with two apparent possibilities. The

³ *Re AT&T Knowledge Ventures LP* [2009] EWHC 343 (Pat), [2009] Bus LR D51

⁴ *HTC Europe Co Ltd v Apple Inc (Rev 1)* [2013] EWCA Civ 451, [2013] RPC 30

⁵ *HTC v Apple* at [149]; *Really Virtual Co Ltd v Comptroller-General of Patents* [2012] EWHC 1086 (Pat), [2013] RPC 3 [10], [33], [36]

word 'and' may have been omitted between the words 'computer' and 'readable', such that the clause requires that the texts are stored on a computer and are capable of being read into a stream of features (but not necessarily deconstructed into the stream of features). Alternatively, the word 'medium' may have been omitted between the words 'readable' and 'into', such that the clause requires deconstructing the training electronic texts into a stream of features, the electronic texts being stored on a computer readable medium. From the context of the description (the first paragraph of the detailed description of the invention, for example), I believe the latter was intended and have construed the claims accordingly.

- 19 The scope of the term 'token' also warrants clarification. The second paragraph of the detailed description of the invention provides this clarification:

Reference in this description to text refers to the basic meaning of the term, where text is the plain word or phrase being identified free of its appearance, location or formatting. Tokens are characteristics of text that differentiate certain text from other text within the same document.

- 20 Finally, the claims require executing a conditional random field algorithm. Conditional random fields are a class of statistical modelling algorithms. While the description focuses on a single specific example of a conditional random field, the description also acknowledges that many such algorithms are known and their use for classifying and labelling text is well known in the art. I have therefore construed the claims as encompassing executing any of the broader class of conditional random field algorithms rather than being limited to use of the specific example algorithm detailed in the description.

Step 2: Identify the actual contribution

- 21 The examiner's definition of the contribution made by the claimed invention has remained unchanged from that set out in his abbreviated examination report dated 15 January 2018 (paragraph 5):

A method for searching an electronic document for passages relating to a concept being searched for, where the concept is expressed as a word or plurality of words, the method comprising: deconstructing by a computer processor training electronic texts stored on a computer readable into a stream of features; wherein the features include the text of complete sentences, tokens used by the text in each sentence, the sequence of sentences, layout of text and typography of text; executing by a computer processor a conditional random field algorithm to label sentences in the electronic document as either being relevant to the concept being searched for ("State A") or as background information ("State B") based on the stream of features; executing by the computer processor a search algorithm which returns those sentences labelled as State A.

- 22 In his letters dated 2 October 2018 (paragraph 12) and 26 August 2020 (paragraph 1), Mr Noble agrees with this identification of the contribution. In the absence of a search, I will continue on this basis, though will interpret "computer readable" as "computer readable medium" in light of the analysis above regarding construction.

Step 3: Ask whether it falls solely within the excluded subject matter and Step 4: Check whether the actual or alleged contribution is actually technical in nature

- 23 I will consider steps 3 and 4 together.
- 24 In his most recent letter dated 26 August 2020, Mr Noble raises two main arguments that the contribution is technical in nature and thus does not fall solely within the excluded subject matter. Firstly, the invention is said not to carry out text processing in the same way that a human would. Secondly, the invention is said to carry out its text processing in a way that is technical.
- 25 As set out above, the case law on computer implemented inventions has been further elaborated to establish five helpful signposts to apply when considering whether a computer program makes a relevant technical contribution. I will first consider the two primary arguments as they are set out in Mr Noble's most recent letter, before considering these arguments in the context of the signposts.

The invention does not carry out text processing in the same way that a human would

- 26 Mr Noble acknowledges that it is generally known for a human (whether or not with the assistance of a computer) to review documents and identify passages relevant to a given subject. However, the contribution made by the present invention is said not to relate to using a computer to carry out a task in the same way as a human would previously have done so without computer assistance (as was the case in each of *Macrossan*⁶ and *Merrill Lynch*⁷). Rather, the contribution is said to replace the typical human document review process with a new natural language processing solution that would not have been carried out by a human doing the same job.
- 27 Mr Noble also accepts that a contribution lying only in using computer software to automate a particular administrative process is not patentable, regardless of whether the administrative process is new or not. However, Mr Noble stresses that the detail of the method of reviewing documents to identify relevant passages as set out in the contribution is not an administrative process, and therefore argues that this case is distinguished from *Macrossan* and *Merrill Lynch*.
- 28 As the contribution relates to specific steps which differ from those that a human would have previously performed (i.e. the contribution goes beyond mere computer automation of a known process), and those steps are not administrative in nature (including, for example: deconstructing training texts into streams of features; executing a conditional random field algorithm; and labelling sentences), Mr Noble contends that the contribution must therefore be a technical one falling in the field of computer natural language processing.

⁶ *Macrossan v Comptroller-General of Patents, Designs and Trade Marks* [2006] EWHC 705 (Pat)

⁷ *Merrill Lynch's Application* [1989] RPC 561 (EWCA)

- 29 In his report of 22 October 2020 (paragraphs 16 and 17) the examiner addresses this argument with reference to *Raytheon*⁸ and *Autonomy*.⁹ In paragraph 37 of *Raytheon*, Kitchin J considered a contribution which went beyond the mere use of a computer program to automate an existing process:

Is this a computer program as such? It obviously must be carried out using a computer but, as I have explained, this does not determine the issue. Nor, as I have said, is it a case where Raytheon has simply sought to protect the implementation on a computer of what had been done before. Nevertheless, it seems to me that this aspect of the contribution is no more than a reflection of how the programmer has chosen to create the desired representation. Just as in Fujitsu the programmer had to devise a program to create a pictorial display which reproduced the effect of a model, so here the programmer had to devise a program to produce a visual representation of the rack and all it contains. The fact he has chosen to do it by synthesising the representation from a number of smaller images is simply a matter of program design. The result is not a new combination of hardware as in Aerotel. Nor is it an improved computer or an improved display as in Vicom. The result is a computer of a known type operating according to a new program, albeit one which reduces the load on the processor and makes an economical use of the computer memory. I agree with the Hearing Officer that this aspect of the contribution relates to a computer program as such.

- 30 Similarly, in paragraph 40 of *Autonomy*, Lewison J specifically considered a contribution related to the field of computer text analysis and processing:

In my judgment, as Mr Tappin submitted, automatic text analysis, comparison and results generation is a paradigm example of a case in which the contribution falls squarely within excluded matter, i.e. a program for a computer. The claimed contribution, so far as the first element is involved does not exist independently of whether it is implemented by a computer. On the contrary, it depends on a computer processing or displaying information in an active window, and on a search program to analyse it and to compare and generate results. Nor does it require new hardware or a new combination of hardware; and it does not result in a better computer. The only effect produced by the invention is an effect caused merely by the running of the program, which consists of the manipulation of data. It is in short a claim to a better search program.

- 31 As no search of the present application has been performed, I am content to accept that the method of text processing set out in the contribution is a new one. Even so, as made clear in *Raytheon*, this does not inherently make the contribution technical in nature. It remains that the method is entirely contingent on a computer program which analyses text and returns relevant portions thereof based on a search query. There is no requirement for new hardware or a new combination of existing hardware, nor has a fundamentally better computer been provided. Any effect produced by the invention lies wholly within the computer and its processing of text data rather than relating to any outside technical process. Therefore, while the invention may well not carry out text processing in the same way that a human would, I am unconvinced that this equates to a contribution which is actually technical in nature and does not fall solely within the computer program exclusion.

⁸ *Raytheon Company v Comptroller General of Patents, Designs and Trade Marks* [2007] EWHC 1230 (Pat), [2008] RPC 3

⁹ *Autonomy Corporation Ltd v The Comptroller General of Patents, Trade Marks & Designs* [2008] EWHC 146 (Pat), [2008] RPC 16

- 32 Furthermore, even if the method set out in the contribution is not an administrative one, and therefore the case is distinguished from *Macrossan* and *Merrill Lynch* as Mr Noble argues, this does not save it from the computer program exclusion. The question to be asked at step 3 is whether the contribution falls solely within the excluded subject matter, and in this case it falls solely within the computer program exclusion.
- 33 Mr Noble's second primary argument is that a specific method of text processing, such as that contributed by the present invention, is technical in line with the decision of the EPO's Technical Board of Appeal in *Vicom*.¹⁰ In *Vicom*, the Board considered an image stored as an electronic signal to be a "physical entity" and thus a claimed method of digital image processing was found to be technical in nature. Mr Noble supposes that if the meaning of a physical entity can encompass a digital image, there is no reason why it cannot also encompass a digital natural language document and thus the present contribution must also be a technical one.
- 34 Additionally, Mr Noble argues that it was not the presence of a "physical entity" which formed the *ratio decidendi* in *Vicom*. Rather, as understood by the Court of Appeal in *Fujitsu*,¹¹ the judgment in *Vicom* was founded on the way the enhanced image was produced, i.e. that the technical field of image processing had been advanced. Mr Noble suggests that the technical field of text processing has been analogously advanced by the present application.
- 35 Finally, Mr Noble highlights a second EPO Technical Board of Appeal decision, *Walker*.¹² The invention in *Walker* related to improving the presentation of natural language text on a display by breaking lines of text at positions determined by the syntactic structure of the text (rather than merely on the physical space it occupied) so as to improve readability and thus enable a user to perform tasks more efficiently. The Board considered this to contribute a technical solution to a technical problem. It must follow, Mr Noble argues, that the present application's contribution to the field of computer natural language processing must be equally technical.
- 36 First, it is important to note that neither of the EPO Technical Board of Appeal decisions relied upon by Mr Noble sets binding precedent, although they may be persuasive. I am also mindful of the divergent approaches taken by the UK courts and the EPO regarding computer programs and technical effects, although the end result should be the same regardless of which approach is followed. Nonetheless, the decision in *Vicom* was considered in *AT&T*, in which at paragraph 20 Lewison J remarked:

What the Board are saying in this paragraph is, I think, that you assess the patentability of a claimed invention ignoring the fact that it operates through a computer program. If, ignoring the computer program, it would be patentable, then the fact that a computer drives the invention does not deprive it of patentability.

- 37 What remains of the present invention if one ignores that it is implemented using a computer program? A method for searching a text document for passages relevant to given search words by deconstructing the document into features and using a

¹⁰ *Vicom* T 208/84 (Computer-related invention)

¹¹ *Fujitsu Limited's Application* [1997] RPC 608 (EWCA)

¹² *Walker* T 49/04 (Text processor)

conditional random field algorithm (a specific class of statistical analysis) to label sentences as either relevant to the concept being searched for or as background information based on those features. Would such an invention be patentable? It is my opinion that it would not. Ignoring the implementation as a computer program, what remains is an abstract method of locating and labelling relevant information in a text document. This is not a patentable technical process or effect. Using a computer program to carry out the invention does not alter this; much as in *Autonomy*, the contribution is in short a better search program for text documents which is not technical in nature.

- 38 Regarding Mr Noble's assertion that the field of text processing is an inherently technical one following *Vicom*, I cannot agree. While *Vicom* related to the method by which a technically enhanced image was produced, the present invention has no equivalent to this enhanced image. Instead, the present invention merely labels its otherwise-unmodified input text as either relevant or background information; no analogous technical alteration of the text occurs.
- 39 With regards to *Walker*, the examiner believes that a distinction can be drawn between the contribution in *Walker* and that made by the present invention. While *Walker* related to improving readability by changing how natural language text was displayed, the present invention makes no such contribution. Rather, the present contribution relates to a method of processing text to determine relevant passages thereof. I agree with the examiner. While it is possible to say that both *Walker* and the present contribution handle natural language in some fashion, this does not mean that both are patentable; it merely demonstrates that inventions involving the handling of natural language can be patentable in some cases.
- 40 For completeness, I will now consider my above analysis within the framework of the guiding *AT&T/HTC* signposts.
- 41 In relation to signpost (i), in his abbreviated examination report dated 15 January 2018 (paragraph 7), the examiner asserted that there is no process external to the computer and hence no outside technical effect. The examiner reiterated this point in his subsequent reports dated 12 March 2020 (paragraph 7) and 22 October 2020 (paragraph 19). In particular, the examiner considers the contribution's use of a conditional random field algorithm (a form of statistical analysis) to identify relevant passages of text even on the basis of dissimilar words (e.g. identifying that a passage mentioning a "patent" is relevant to "intellectual property") to occur wholly within a conventional computer and thus has no technical effect on a process outside that computer.
- 42 In addition to the two primary arguments discussed above, Mr Noble further suggests that this signpost should be interpreted broadly and refers to *Vicom* and *Toshiba*¹³ as examples of broader technical effects. *Vicom* has already been discussed above. In *Toshiba*, the hearing officer considered a better way of speech processing to be a similarly technical process occurring outside the computer. Mr Noble again posits that if processing images or speech is technical, processing

¹³ *Toshiba Research Ltd* BL O/453/14

natural language documents must be equally technical, and thus the contribution relates to a technical effect on a process outside the computer.

- 43 As discussed above, I am not convinced by this line of argument as the field of document and text analysis is not an inherently technical one, nor does the present invention alter the input documents in any technical sense to produce a technically better output as was the case in *Vicom*, nor does the present invention act on a technical process external to the computer as was the case in *Toshiba*. As I am unable to identify any technical effect on a process external to the computer, signpost (i) points away from the contribution being technical in nature.
- 44 In relation to signpost (ii) the examiner has consistently maintained that no contribution has been made at the architectural level and any effect is tied to particular data being processed by a particular application for a particular purpose. Mr Noble has not challenged this assertion. I agree that no such technical effect exists and signpost (ii) is not helpful in this situation.
- 45 In relation to signpost (iii) the examiner has stated the computer has not been made to operate in a new way beyond the routine running of a new program in the usual fashion. Again, Mr Noble has not made any explicit arguments against the examiner's assertion, although he has highlighted that the method being carried out by the program is new. Regardless of whether the program itself is new, the fundamental operation of the computer itself remains unchanged as a consequence of the identified contribution. The contribution is no more than a general purpose computer running an application in the conventional manner and signpost (iii) is not helpful in this situation.
- 46 In relation to signpost (iv) the examiner has maintained that a better computer in terms of increased efficiency and effectiveness has not been contributed. Again, Mr Noble has not made any explicit arguments on this point. While the contributed software application itself may well be more efficient or effective than previous text document search tools, there is no effect on how the computer itself operates beyond the normal interaction between a high-level software application and a computer. Signpost (iv) therefore is not helpful.
- 47 Although not explicitly addressing signpost (v), Mr Noble has identified the challenge addressed by the claimed invention as "how to make a machine, which cannot 'understand' English or other languages, and cannot 'understand' law or medicine or whatever the documents might be about, accurately and quickly identify the relevant passages from the text". In both his initial abbreviated examination report and his pre-hearing report dated 22 October 2020, the examiner considered the perceived problem to similarly relate to searching electronic documents to identify relevant passages. While the claimed invention may well address the problem of identifying relevant passages of a text document more accurately or quickly, this is not a technical problem nor has it been solved with a technical solution. Signpost (v) is not met.
- 48 Each of the five guiding *AT&T/HTC* signposts is either not relevant to the current application or points away from the contribution being technical in nature. Outside of this framework, and considering the application in its entirety, I have not found either of Mr Noble's arguments to be convincing. The contribution relates to a computer-

implemented method of identifying and labelling passages of text documents which are relevant to a search query. This falls solely within the excluded subject matter as a program for a computer as such and is not technical in nature.

Conclusion

- 49 I find the claimed invention is excluded from being patented under section 1(2) of the Act as consisting of a program for a computer as such and I therefore refuse this application under section 18(3).

Appeal

- 50 Any appeal must be lodged within 28 days after the date of this decision.

J PULLEN

Deputy Director, acting for the Comptroller