



PATENTS ACT 1977

APPLICANT	Emotional Perception AI Ltd.
ISSUE	Whether application GB1904713.3 complies with Sections 1(1) & 1(2) of the Patents Act 1977 (as amended)
HEARING OFFICER	Stephen Brown

DECISION

- 1 Patent application GB1904713.3 entitled “Method of training a neural network to reflect emotional perception and related system and method for categorizing and finding associated content” was filed on 3rd April 2019 in the name of Mashtraxx Limited. The application was published on 4th November 2020 as GB 2583455 A. It has since been assigned to Emotional Perception AI Limited.
- 2 The applicant was not able to satisfy the examiner that the application met the requirements of the Act, and so it was taken to a hearing before this Office on 22nd June 2022. The Hearing Officer, Phil Thorpe, acting for the Comptroller, refused the application, deciding¹ that the invention fell solely within matter excluded under section 1(2) as a program for a computer as such.
- 3 The applicants appealed to the High Court and were successful in getting this decision reversed². The Comptroller then successfully appealed to the Court of Appeal³ resulting in the case going before the Supreme Court.
- 4 The Supreme Court decided⁴, at paragraph 96 of their decision, that an Artificial Neural Network (ANN) was a program for a computer, as such. They also held that steps 2-4 of the so called *Aerotel*⁵ test should no longer be followed to decide issues of ‘excluded matter’. At paragraphs 65-67 of their decision they provided instructions on what would replace that previously binding precedent. The Supreme Court

¹ BLO/542/22

² Emotional Perception AI Ltd. V Comptroller-General of Patents, Designs and Trademarks, [2023] EWHC 2948 (Ch)

³ Comptroller-General of Patents, Designs and Trademarks v Emotional Perception AI Ltd., [2024] EWCA Civ 825

⁴ Emotional Perception AI Ltd. V Comptroller-General of Patents, Designs and Trademarks, [2026] UKSC 3

⁵ *Aerotel Ltd v Telco Holdings Ltd (and others) and Macrossan’s Application* [2006] EWCA Civ 1371

however, declined to follow this preferred process in full, instead remitting the case back to the UKIPO to consider the issue.

- 5 Thus, another examination report was issued by this Office on 27th March 2026, raising a new set of objections under the approach mandated by the Supreme Court. The applicants responded with amendments and argument on 27th April 2026. These did not fully satisfy the examiner and so the matter came before me for a hearing on 4th August 2026.
- 6 At the hearing, which was conducted online, the applicants were represented by Mr Bruce Dearling of Hepworth Browne. Also present was my assistant Mr Alastair Kelly.

The Application

- 7 The application relates to a computer implemented system for recommending files, most specifically music files. The system does this using an Artificial Neural Network (ANN) that has been trained to map measurable features of the music (such as tempo or volume change) onto semantic features (such as 'mood' or 'emotional impact'). This allows the system to recommend files that the user should find 'emotionally suitable'. The application contains great detail about how the training of the ANN is achieved but I will not repeat it here as the claim, included below, discloses it more than adequately.
- 8 The latest working version of the claims was filed on 28th April 2026. Mr Dearling then filed a further set of claims, along with his 75 page skeleton argument dated 27th July 2026, which only reached me on the 30th July. However, as there was insufficient time to adequately examine these claims before the hearing, I will treat them as an auxiliary request.
- 9 The version of the claims filed on 28th April 2026, contains 4 independent claims: claims 1 & 10 relating to a computer implemented vector search system for providing semantically relevant file recommendations, claim 4, relating to a method of providing said recommendations, and claim 9 to a search engine for providing said recommendations. I note that the version filed on 27th July 2026 deletes claims 9 & 10 and leaves independent claims 1 & 4 unaltered. I thus do not believe that these latest amendments will affect my conclusions in any way.
- 10 While there are some slight differences in the detail of claims 1 & 4, I believe that both have substantially the same scope and can thus be dealt with together for the purposes of this decision. Like the various courts that have preceded me in dealing with this case, I shall focus on claim 4. I believe that any decision I reach for this claim will apply equally to all the claims.
- 11 Claim 4 (either 28th April or 27th July 2026) reads:

A computer-implemented method of providing semantically relevant file recommendations in a computer system including a processor-implemented artificial

neural network “ANN” having an output capable of generating a property vector in property space, the method comprising:

a) training the ANN by subjecting the ANN to a multiplicity of pairs of training data files sharing a content modality where for each pair of training data files there are two independently derived separation distances, namely:

a first independently derived separation distance that expresses a measure of relative distance between a first pair of training data files in semantic embedding space, where the first independently derived separation distance is obtained from natural language processing “NLP” of a semantic description of the nature of the data associated with each one of the first pair of training data files; and

a second independently derived separation distance that expresses a measure of relative distance similarity between the first pair of training data files in property embedding space, where the second independently derived separation distance is a property distance derived from measurable properties extracted from each one of the first pair of training data files;

and wherein shared content modality is: (i) video data files; or alternatively (ii) audio data files; or alternatively (iii) static image files;

b) in a backpropagation process in the processor-implemented ANN, using output vectors generated at the output of the ANN from processing of said multiplicity of pairs to adjust weighting factors in the ANN, thereby adapting the ANN during training to converge distances of generated output vectors, in property embedding space, towards corresponding pairwise semantic distances in semantic embedding space and;

c) storing, in a database, a multiplicity of reference data files with content modality corresponding with that of target data and a stored association between each reference data file and a related individual property vector, whereby each related individual property vector is obtained from processing, within the trained ANN, file properties extracted from its respective reference data file and each related individual property vector encodes a corresponding semantic description of its respective reference data file;

d) in response to the trained ANN receiving target data as an input and for which target data an assessment of relative semantic similarity of its content is to be made, using the ANN to produce a file vector (V_{File}) in property space for the target data based on processing, using fixed weighting factors within the trained ANN, of file properties extracted from the target data;

e) comparing the file vector (V_{File}) of the target data with individual property vectors of the multiplicity of reference data files in the database to produce an ordered list which identifies relevant reference files that have property vectors that are measurably similar to the property vector and thus identifying relevant reference data files that are semantically similar to the target data;

f) sending, over the communications network, relevant reference data files to the user device; and,

g) at the user device, receiving the relevant reference files and outputting the content thereof.

The law

Article 52 of the EPC and Section 1(2) of the Patents Act 1977

- 12 The Supreme Court held, at paragraphs 65-67 of their decision⁴, that UK law should adopt the same interpretation of Article 52 of the European Patent Convention (EPC) as the Enlarged Board of Appeal in *G 1/19*⁶. Article 52 of the EPC reads:

- (1) European patents shall be granted for any inventions, in all fields of technology, provided that they are new, involve an inventive step and are susceptible of industrial application.*
- (2) The following in particular shall not be regarded as inventions within the meaning of paragraph 1:*
 - (a) discoveries, scientific theories and mathematical methods;*
 - (b) aesthetic creations;*
 - (c) schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers;*
 - (d) presentations of information.*
- (3) Paragraph 2 shall exclude the patentability of the subject-matter or activities referred to therein only to the extent to which a European patent application or European patent relates to such subject-matter or activities as such.*

- 13 Of course, I am not making this decision under the EPC but under the Patents Act 1977 (henceforth “the Act”). However, it is long accepted law that Section 1(2) of the Act has identical scope and intent to Article 52. I will thus consider the two terms interchangeable. Both when interpreting the Supreme Court’s decision and for my own deliberations. For completeness, Section 1(2) of the Act reads:

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) a discovery, scientific theory or mathematical method;*
- (b) a literary, dramatic, musical or artistic work or any other aesthetic creation whatsoever;*

⁶ EPO Enlarged Board of Appeal in *G 0001/19* - ECLI:EP:BA:2021:G000119.20210310

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

(d) the presentation of information;

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.

14 Specifically, the Supreme Court held⁴ that the approach which should be adopted in the UK is that contained in the Duns principles other than principle G (i.e. Duns principles A-F). The Duns principles, as set out in paragraph 30 of G 1/19⁶ are:

- a) Article 52(1) EPC sets out four requirements to be fulfilled by a patentable invention: there must be an invention, and if there is an invention, it must satisfy the requirements of novelty, inventive step, and industrial applicability.*
- b) Having technical character is an implicit requisite of an "invention" within the meaning of Article 52(1) EPC (requirement of "technicality").*
- c) Article 52(2) EPC does not exclude from patentability any subject matter or activity having technical character, even if it is related to the items listed in this provision since these items are only excluded "as such" (Article 52(3) EPC).*
- d) The four requirements invention, novelty, inventive step, and susceptibility of industrial application are essentially separate and independent criteria of patentability. Novelty, in particular, is not a requisite of an invention within the meaning of Article 52(1) EPC, but a separate requirement of patentability.*
- e) For examining patentability of an invention in respect of a claim, the claim must be construed to determine the features which contribute to the technical character of the invention.*
- f) It is legitimate to have a mix of technical and "non-technical" features appearing in a claim, in which the non-technical features may even form a dominating part of the claimed subject matter. Novelty and inventive step, however, can be based only on technical features. Non-technical features, to the extent that they do not interact with the technical subject matter of the claim, do not provide a technical contribution to the prior art and are thus ignored in assessing novelty and inventive step.*
- g) For the purpose of the problem-and-solution approach, the problem must be a technical problem. The technical problem may be formulated using an aim to be achieved in a non-technical field, and which is thus not part of the technical contribution provided by the invention to the prior art. This*

may be done in particular to define a constraint that has to be met (even if the aim stems from an a posteriori knowledge of the invention).

Novelty and inventive step

- 15 It can be seen that the Duns principles include the assessment of novelty and inventive step. These requirements are covered, in UK law, by section 1(1) of the Act. That section reads:

A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say

(a) the invention is new;

(b) it involves an inventive step;

(c) it is capable of industrial application;

(d) the grant of a patent for it is not excluded by subsections (2) and (3) or section 4A below; and references in this Act to a patentable invention shall be construed accordingly

- 16 Sec. 3 of the Act goes on to say:

An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above (and disregarding section 2(3) above).

- 17 Sec. 2(2) of the Act states that:

The state of the art in the case of an invention shall be taken to comprise all matter (whether a product, a process, information about either, or anything else) which has at any time before the priority date of that invention been made available to the public (whether in the United Kingdom or elsewhere) by written or oral description, by use or in any other way.

- 18 In UK law, the specific process to assess inventive step was set out by the Court of Appeal in *Windsurfing*⁷ in which the court formulated a four step process. The Windsurfing process was re-formulated by Jacob LJ in the Court of Appeal decision of *Pozzoli*⁸ as follows:

(1)(a) Identify the notional “person skilled in the art”

(1)(b) Identify the relevant common general knowledge of that person;

(2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;

⁷ *Windsurfing International Inc. v Tabur Marine (Great Britain) Ltd*, [1985] RPC 59

⁸ *Pozzoli SPA v BDMO SA* [2007] EWCA Civ 588

(3) Identify what, if any, differences exist between the matter cited as forming part of the “state of the art” and the inventive concept of the claim or the claim as construed;

(4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

EPO Enlarged Board of Appeal Decision G 1/19⁶

19 At the hearing, Mr Dearling argued that the EPO’s decision G 1/19 was now binding precedent and that I must therefore adhere to all its teaching.

20 I do not believe that this is the correct interpretation of the Supreme Court’s decision⁴. At paragraph 66 of this decision, the Supreme Court held that:

66. In our view, the approach which should be adopted by courts in the UK is that contained in the Duns principles other than principle G (and the second paragraph of the Comvik headnote), as explained by the further reasoning in G1/19, in particular about the need for an intermediate step between “any hardware” and inventive step to determine which features in a “mixed” invention contribute to its technical character: see again para 39 of the Board’s reasons. This is for the purpose of excluding non-technical features (i.e. features which do not contribute to the technical character of the invention) when assessing at the next stage whether the invention involves an inventive step in relation to the prior art.

21 I interpret this to mean that I must follow the Duns *principles*, explicitly including the intermediate step, *as explained* in G 1/19⁶. It does not, I think, mean that all of G1/19 is necessarily binding on me. It remains persuasive, albeit highly so. As long as I follow the Duns approach, I believe that I am within the Supreme Court’s mandate and not acting ultra vires.

22 Specifically, the part of G 1/19⁶ which I believe is binding is the part quoted by the Supreme Court at paragraph 43 of their decision⁴:

43. The Enlarged Board added this commentary on the steps of particular relevance to this appeal, at paras 37-39, under the heading “Two-hurdle approach”:

“37. To be patentable, any invention has to pass the eligibility test under Art 52 EPC (i.e. it must not fall under the ‘non-inventions’ mentioned there) and also fulfil the other criteria listed in that article (novelty, inventive step, etc). For computer-implemented inventions, the twofold test for patent eligibility and for inventive step (using the Comvik criteria) is often referred to as the ‘two-hurdle approach’.

38. It may be that a shift has taken place in the relative level of each of these two hurdles in the sense that it has become easier to clear the

eligibility hurdle of Art 52 EPC ... and more difficult to pass the inventive step hurdle of Art 56 EPC. As result of this shift, it could be said that there is now in effect an additional intermediate step to assess the 'eligibility of the feature to contribute to inventive step'.

39. The two-hurdle approach for computer-implemented inventions actually entails three steps. Establishing whether a feature contributes to the technical character of the invention constitutes an intermediate step between assessing (i) the invention's eligibility under Art 52 EPC, and (ii) whether the invention is based on an inventive step vis-à-vis the closest prior art. This additional intermediate step serves as a filter for features contributing to a technical solution of a technical problem in view of the closest prior art. Only those distinguishing features can contribute to inventive step."

- 23 From this I conclude that I must follow the 'two hurdles with intermediate step' approach. Blending this approach with the UK precedent on inventive step, I believe that a valid approach may be summarised as:

1. The First Hurdle – Is the claim excluded under sec. 1(2)?

- a) *Construe the whole claim - include every feature, regardless of novelty, inventive step or industrial applicability;*
- b) *Does the whole claim fall entirely within one or more of the exclusions defined in sec.1(2)? If it does, then the claim is excluded and steps (c-e), below, may be omitted. However, if any feature, no matter how lacking in novelty, inventive step, or industrial applicability, falls outside the exclusions then the claim is not excluded (i.e. the EPO's 'any hardware' approach);*

2. The Intermediate Step

- c) *Identify the technical character of the claim as a whole. While holding this character in mind, go through each feature of the claim in turn and decide if it is:*
 - i. *a technical feature that contributes to the technical character of the claim;*
 - ii. *a technical feature that does not contribute to the technical character of the claim;*
 - iii. *a non-technical feature that nonetheless contributes to the technical character of the claim;*
 - iv. *a non-technical feature that does not contribute to the technical character of the claim;*

Even if it is not straightforward to explicitly identify the technical character in advance of steps (i-iv), the features can still be categorised, as above, by asking if they are contributing something technical to the claim.

For this step any feature that falls entirely within one or more of the exclusions in sec.1(2) is considered non-technical. Nonetheless, it may still contribute to the technical character of the invention when considered in the context of the claim as a whole;

3. The second Hurdle – Is there an inventive Step?

d) *Assess inventive step following Pozzoli⁸. Step 1 of the test can be applied unaltered. Step 2 has effectively been done already under steps (a) and (c), above. In step 3 of Pozzoli⁸, the key analysis is identifying what, if any, differences exist between the matter cited as forming part of the “state of the art” and the features identified in part (c) above. Note only those features falling into categories (i) and (iii) can be considered.*

Features in category (iv) are not eligible – they are ignored when assessing novelty and inventive step. Category (ii) occurs when features that per se qualify as technical cannot contribute to the technical character because they have no technical function within the context of the claimed invention. These features are, likewise, considered ineligible differences;

e) *Finally step 4 of Pozzoli⁸ should be applied: I.e. do the eligible differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?*

- 24 While I have set out the steps above in a particular order, I am aware that the Supreme Court indicated that the intermediate step could be performed as part of the *Pozzoli*⁸ test, if helpful. Thus, if good prior art is available, it could be more efficient to implement step (d) before step (c). I.e. identifying those features that are not disclosed by the prior art, before considering (only) them for step (c). However, if taking such an approach, it is important that during step (c), the technical character is still assessed for the claim as a whole, including any interactions a feature may have with any of the other features of the claim.

Other aspects of G 1/19⁶

- 25 As I reasoned above, I do not think that *all* of G 1/19⁶ is binding on me. However, in deference to Mr Dearling’s extensive arguments, I will nonetheless consider the various other parts of G 1/19⁶ that he was keen I should take account of. Specifically, he pointed me at paragraphs 85 & 86, which state (my emphasis added throughout):

85. The above figure shows - in a simplified, non-exhaustive form - how and when “technical effects” or “technical interactions” may occur in the context of a computer-implemented process. The arrows represent interactions that are different from abstract data input, data output or internal data processing or transfer. Technical input may consist of a measurement; technical output may exist as a control signal used for controlling a machine. Both technical input and technical output are typically achieved through direct links with physical

reality. Adaptations to the computer or its operation, which result in technical effects (e.g. better use of storage capacity or bandwidth), are also examples of features that may contribute to inventive step (for a list of examples and references to the relevant board decisions, see T 697/17, Reasons, point 5.2.5). In sum, **technical effects can occur within the computer-implemented process (e.g. by specific adaptations of the computer or of data transfer or storage mechanisms) and at the input and output of this process**. Input and output may occur not only at the beginning and the end of a computer-implemented process but also during its execution (e.g. by receiving periodic measurement data and/or continuously sending control signals to a technical system).

86. It is self-evident that the input and output are always nothing other than data, if only the data processing within the computer is considered.

Computer-implemented processes, however, often include features - which could be technical or non-technical per se - that reflect the interaction of the computer with the external world. As explained above, it is not possible to exhaustively describe (or represent in graphical form) every type of feature of a computer-implemented invention that may contribute to the invention's technical character.

26 Mr Dearing also referenced paragraph 99, which states:

99. The calculation of the physical state of an object (e.g. its temperature) is typically part of a measurement method. **It is generally acknowledged that measurements have technical character** since they are based on an interaction with physical reality at the outset of the measurement method. Measurements are often carried out using indirect measurements, for example, the measurement of a specific physical entity at a specific location by means of measurements of another physical entity and/or measurements at another location (see e.g. T 91/10, Reasons, point 5.2.1; T 1148/00, Reasons, point 9). **Even though such indirect measurements may involve significant computing efforts, they are still related to physical reality and thus of a technical nature**, regardless of what use is made of the results (for a combination of measurements and simulations see e.g. T 438/14).

27 And paragraph 101, which reads:

101. Many cases referring to "tangible" effects use their absence as an argument against patentability (see, as a recent example, T 215/13, Reasons, points 5 and 6 - no tangible technical problem solved). However, the Enlarged Board fully supports the view expressed in T 533/09 (Reasons, point 7.2) that **a tangible effect is not a requirement under the EPC**. Moreover, it is unclear to what extent the notions of "tangible effect" and "further technical effect" overlap. A criterion based on tangibility - in addition to the requirement of technicality - thus cannot contribute to a more precise delimitation of patentable inventions.

28 Finally, he pointed me at paragraph 112:

112. Algorithms are the basis of any computer-implemented invention. Formulating an algorithm, like establishing a model, is a cognitive exercise. The definition of an algorithm does not necessarily involve technical considerations (G 3/08, Reasons, point 13.5.1, referring to the travaux préparatoires). **Algorithms contribute to the technical character of a computer-implemented method only if they serve a technical purpose** (see T 1358/09, referring to T 1784/06). For example, an algorithm may be particularly suitable to be run on a computer in that its design was motivated by technical considerations relating to the internal functioning of the computer (see T 1358/09, point 5.5).

29 And paragraph 115:

115. From the above figure (point E.I.c) and considerations on effects that may be considered technical (points E.I.c to E.I.g), it would appear that most "simulations as such" may have few technical effects as far as input and output (which consist of data in "simulations as such") are concerned. **However, even if there are no real external physical effects, the software - including the underlying algorithms - may still contribute to the technical character of a computer-implemented invention in that it is adapted to the internal functioning of the computer or computer system/network** (see amicus curiae brief (6), page 6; see also T 697/17). Simulations may even require computer power which is not available from a standard computer (for example, quantum computing could be necessary for turbulence or molecular simulations). Technical improvements to simulations as such could also be achieved by particular details of the implementing software.

30 While I don't believe that I am bound by these paragraphs, I will nonetheless bear in mind their guidance in the following analysis.

Analysis

31 I will now begin the 'two hurdles with intermediate step' approach that the Supreme Court directed me to follow:

The First Hurdle – Exclusion under sec. 1(2)

32 While this has already been decided by the Supreme Court, for completeness, I will briefly include their findings here. At paragraph 96, the Supreme Court decided that:

Accordingly, we conclude that the Hearing Officer was right to hold that an ANN is a program for a computer. It follows that, as the Court of Appeal correctly held, the exclusion from patentability for "programs for computers" provided by article 52(2)(c) of the EPC is engaged in this case.

33 At paragraph 98 they held that:

This question was addressed by the Hearing Officer and in the courts below applying the Aerotel approach. We have rejected that approach and

concluded, in relation to issue 1, that the EPO's "any hardware approach" should be applied. It is beyond dispute that on this approach the claims are to an "invention" and are not excluded by article 52(2)(c). Although the claimed method involves an ANN which is a program for a computer, it also involves technical means because the ANN can only be implemented on some form of computer hardware. In addition, the claims refer to a database for storing data files, a communications network and a user device - all of which require or constitute hardware. That is sufficient to show that the subject matter of the claims has technical character and is not to a computer program "as such". It follows that the UKIPO was wrong to decide, for the reason it did, that the application for a patent should be refused.

- 34 The current application thus clears the first hurdle. At paragraph 100, the Supreme Court⁴ went on to say:

Following the guidance in G1/19, the next stage would be to undertake what the Enlarged Board called the "intermediate step" lying between steps (1) and (2) of what had until then been described as "the two-hurdle approach" for computer implemented inventions: see paras 37-39 of G/19. Step (1) is to decide whether the subject matter of the claim qualifies as an invention, by applying article 52 of the EPC. Step (2) requires a consideration of whether the invention qualifies as novel under article 54 of the EPC and involves an inventive step under article 56 of the EPC. We have concluded that the claims in issue satisfy step (1). The subject matter of the claims constitutes an invention within the meaning of article 52 of the EPC.

- 35 Finally, at paragraph 118, they added:

In the result we have concluded that the right course is to allow the appeal, set aside the decision of the Hearing Officer from which the appeal originates and confine this court's ruling to the matters resolved above, including those aspects of the intermediate step which we have discussed. How it applies to this invention, and whether the features of the invention which contribute to its technical character can be considered to involve an inventive step, are questions to be considered by the Hearing Officer.

- 36 I thus shall begin my analysis with the intermediate step:

The Intermediate Step

- 37 As explained above, this step comprises determining the technical character of the claim, as a whole, and deciding which features of the claim contribute to it. Those features which do not contribute to the *technical* character are not eligible differences when considering inventive step.
- 38 At the hearing Mr Dearling declined to explicitly set out what he thought the technical character of the claim was. Instead, he emphasised, at various points, that I should consider what the invention is actually achieving in the real world. On this issue, Mr Dearling stressed that the ANN's learning objectives were the key since it was they

that defined the end state of the ANN and therefore what it actually did. Furthermore, he argued that the learning objectives were the necessary technical contribution since they used real physical properties of files in order to provide a mapping function from the physical to the semantic. This allowed the 'semantic gap', between what the user really wanted and what the system recommended, to be closed, giving a far better search result than in prior art systems. This approach, Mr Dearling argued, was at a higher conceptional level than mere programming and was thus worthy of patent protection. Furthermore, he argued that the solution to how this concept was implemented, i.e. the specific method of training to achieve the learning objective and the resultant ANN, was inherently technical.

- 39 Unlike Mr Dearling however, I believe that it is helpful for me to define the technical character of the claim before performing the intermediate step. At its simplest, I believe that the technical character of the invention may be expressed as:

Computer hardware running a program (the ANN) that selects and outputs a file.

- 40 Prima facie, this may look a little reductive. If that is all there is then it is clearly very well known and thus lacking the required inventive step. However, I do agree with most of Mr Dearling's points. The key is what the invention actually achieves in the real world. What it achieves is the selection, and output, of a file. While, that file may possibly be the same as one selected by a prior art search engine, I will give Mr Dearling the benefit of the doubt and assume that more often than not it is a 'better' file. By better in this instance, I mean 'semantically closer' to what the user desired. I will thus expand my definition of the technical character of the invention to:

Computer hardware running a program that selects and outputs a 'semantically better' file.

- 41 Thus, I believe that the key question before me is: Is outputting a 'semantically better' file a *technical* result?
- 42 If it is, then all the features of the claim that contribute to the selection of the file, i.e. the details of the ANN's learning objectives and how they allow the trained ANN to close the 'semantic gap', are eligible differences when considering inventive step. It matters not that the Supreme Court has decided that they are a mathematical method resulting in a program for a computer since they contribute to the technical character of the invention.
- 43 In this scenario, I am confident that the current application would be inventive over the prior art, since none of it discloses the same details, nor renders them obvious.
- 44 Conversely however, if I decide that outputting a 'semantically better' file is not a technical result, then I am left with only (known) hardware running a program that outputs a (non-technically distinct) file. Here, how the file is chosen is an ineligible difference for the purposes of assessing inventive step since which file is output is a non-technical difference and thus cannot be part of the *technical* character of the invention as a whole.

45 So, is outputting a 'semantically better' file a technical result? The *Cambridge Dictionary*⁹ defines 'semantically' as;

"In a way that is connected with the meaning of words"

46 And semantics as:

"The study of meanings in a language"

47 I am conscious though that I should interpret the claims in light of the description. So, I will now turn there for guidance on what 'semantically better' is intended to mean in this application. The very first paragraph of the description states that (my emphasis added throughout):

*This invention relates, in general, to artificial intelligence and an ability of a neural network to be trained to reflect **human subjective responses** to sensory stimuli such as audio particularly in the form of music or image data (whether static or video), **and/or subjective contextual input** such as a description of smell or a piece of text. More particularly, but not exclusively, the present invention relates to artificial intelligence that realizes an identification system capable of categorizing and reliably identifying - **in an emotionally-perceptive semantic sense** - perceived commonality or dissimilarity between contextual properties of songs or images to allow a user of, typically, a multimedia device to search for and locate, from an extensive catalogue, a ranked order of data files sharing commonality.*

48 To me this indicates that the application uses 'semantic' to signify the subjective *meaning* that a human gives to a thing, especially the perceived emotional meaning.

49 Page 18, lines 23-25, states that:

*The first vector in **semantic** space is based on the **human descriptions of source files** and thus carries significantly higher contextual weight.*

50 Thus, the semantic data used by the current application is sourced from descriptive text written by humans.

51 Page 19, lines 11-17 state:

*Consequently, to produce a truly representative predictive tool that assesses **emotional/perceptive dissimilarity or closeness**, it is necessary that processing of the absolute measurable properties eventually leads to an identical result to processing of the **human judgment, i.e. semantic, qualities**. In order to reflect true **emotive perception**, the assessment relating to **human judgment** is of higher importance and trumps the absolute evaluation of identifiable and measurable tangible properties that are both obtained from the common source. Forcing a change in applied weights and bias values in an artificial neural network that processes the identifiable and*

⁹ <https://dictionary.cambridge.org/dictionary/english/semantically>

*measurable tangible properties obtains **closer alignment with reality, as reflected by human intelligence, judgment and perceptive reasoning.***

- 52 This text, I believe, closely echoes Mr Dearling's position. At the hearing, he argued that a 'semantically better' result was one that was closer in physical reality to the desired result, and thus it was *technically* better. He did then add the caveat "or ones perception of physical reality". While this may have been a simple slip of the tongue, it is, in my opinion, closer to the truth and aligns better with the above quoted text.
- 53 Based on all the above, it is my view that a 'semantically better' file, in this application, is one which a human user would perceive as closer emotionally to what they were looking for. This is 'better' only in a subjective psychological sense as given meaning by a human being. I cannot see any *technical* benefit in the file selection process. It was not found faster, nor using less computing power than would be done in prior art systems. The output file is better only in that a human being might say it was a *subjectively* better result. I am not convinced that that is enough to be considered a *technical* effect.
- 54 I am thus forced to revisit my definition of the technical character of the invention once more. I revise it to be:

Computer hardware running a program that selects and outputs a '~~semantically better~~' file.

- 55 Having decided that outputting a 'semantically better' file is not a technical result, then, as discussed above, the details of how the file is chosen, i.e. the details of the ANN's learning objectives and how they allow the trained ANN to close the 'semantic gap', are ineligible differences for the purposes of assessing inventive step since they do not contribute to the technical character of the invention, as a whole.

The second Hurdle - Inventive Step

- 56 From my analysis of the intermediate step, the only features of the claims eligible for assessing inventive step are: Computer hardware running a program that selects and outputs a file. This is clearly very well known, and I consider it obvious over common general knowledge. I thus conclude that the application lacks the required inventive step and thus fails sec.1(1)(b) of the Act.

EPO Equivalent case

- 57 I note that the applicants also filed an application, EP3931721, at the EPO with broadly similar claims. At the hearing, Mr Dearling stressed that I should ignore any parallels with that application as it had not been the subject of an EPO appeal, the applicants having decided to abandon it for financial reasons after it was rejected by the examining division for a lack of inventive step.

- 58 Of course, the decisions of the EPO's examining division are not even persuasive on me. Thus, I will only note that it is reassuring that the body that is the most familiar with the *Duns* approach reached an identical conclusion.

Decision

- 59 I have decided that the invention defined in the independent claims lacks an inventive step as required by Section 1(1). I have considered the contents of the application, including the 'auxiliary' claims filed on 27th July 2026, and do not believe that any saving amendment is possible. I therefore refuse the application under section 18(3).

Appeal

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

STEPHEN BROWN

Patent Examination Group Head