Commissioner's decision

Section 2: Pattern Recognition System

A system utilizing a threshold value for accepting or rejecting further samples for pattern recognition is acceptable subject matter under Section 2.

Final Rejection - reversed.

This decision deals with Applicant's request for review by the Commissioner of Patents on Application 336,917 (class 354-227) filed on October 3, 1979, assigned to Hajime Industries Ltd. and is entitled "Standard Memory Take In Method". The inventor is Yoshida Hajime. The Examiner in charge issued a Final Action on May 19, 1982 refusing to allow the application.

This application relates to a pattern recognition system wherein there is formed a standard memory system containing numerous different examples of objects or patterns thereof to be recognized. Forming the standard memory take-in system comprises the steps of storing data representing a first sample in a memory, calculating a difference between data representing a second sample and data representing a first sample, storing the data representing a second sample in the memory if the differences exceeds the predeterminated threshold values, calculating differences between data representing a subsequent sample and data representing each sample stored in the memory, and storing the data representing a subsequent sample in the memory if all of the differences of the objects exceed the threshold values.

In refusing the application and claims in his Final Action as not patentable under Section 2 of the Patent Act, the Examiner stated (in part):

> ... Applicant has attached a United States submission to the letter of January 7, 1982. Page 6 of the submission (line 9) states: "as in the present instance, a standard general purpose computer of the prior art was satisfactory for performing the method claimed". Also on line 20 of page 6 of the United States submission it is stated: "the apparatus for the present method is conventional". Thus applicant is not claiming a method"carried out with a specific novel computing apparatus" as set out in guideline 5 on page xxvi of the Canadian Patent

> Office Record of August 1, 1978 wherein a Commissioner's Decision re computer programs is reported. The process claimed is merely an algorithm for processing information since it is carried out solely in a general purpose computer (as affirmed in the letter of April 22, 1982).
>
> In the letter of April 22, 1982 applicant states that the application is directed to a method of pattern recognition. This assertion is contrary to claim 1 which directs the method to a standard memory take-in method. The resulting memory is used in a pattern recognition system but the method claimed is not the method of operation of a pattern recognition system (see page 1 line 6). Rather, the method claimed is an algorithm for deciding if data presented to a memory is to be stored or discarded. The criteria for deciding if presented data is to be stored is the degree of similarity between the presented data and data already stored. Thus the process claimed is carried out solely in a general purpose computer and is not a method of pattern recognition.
>
> Applicant states in the letter of April 22, 1982 that the method includes "multiplication of a threshold". This step is not found in the claims nor disclosure. Clarification of the relevancy of applicant's remark is requested. Also clarification of the term "patent" on line 8 paragraph 4 of the letter of April 22, 1982 is required. Is "pattern" intended?
>
> The application remains rejected as being directed to non-statutory subject matter in view of the definition of invention in Section 2 of the Patent Act.
>
> ...

In response to the Final Action the applicant submitted an amended single claim to replace the two claims on file and requested a review. Amended claim 1 reads as follows:

> A method of entering data into a memory store to form a standard for recognizing that any one of a set of patterns belongs to a particular pattern group, each pattern being formed by a plurality of elements having respective locations within the pattern, the method comprising the steps of
>
> a) consecutively sampling a set of patterns to provide respective data signals representing the respective locations of elements in each sample pattern;
>
> b) storing the data signals from a first sample, whereby the stored data signals are unconditionally adopted as part of said standard;
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> c) comparing the data signals from a second sample with the stored signals from the first sample to determine the difference;
>
> d) comparing the difference with a predetermined initial threshold value which represents an acceptable deviation of the location of elements inthe first sample from the location of elements in a reference pattern;
>
> e) storing the data signals from the second sample, if the difference is greater than the threshold value, as part of said standard, the data signal from the second sample not being stored if the difference is less that the threshold value;

f) providing a new threshold value, as a result of the comparison step (d);

g) checking whether or not the memory store is filled to capacity with data signals and continuing the sampling until the memory store is filled and said standard has been completed, said samplings being continued by;

h) repeating steps (c) to (f) with data signals from a third sample, wherein the latter data signals are compared with the stored data signals and the third sample data signals are stored if the differences between the third data signals and the stored data signals is greater than the current threshold value, and so on, with data signals from a fourth, fifth ... sample, whereby the threshold value is thereby continuously updated.

The issue before the Board is whether or not the application and amended claim are directed to patentable subject matter in view of Section 2 of the Patent Act.

We look to the decision in Schlumberger Canada Ltd. v. The Commissioner of Patents (1981) 56 CPR (2d) at 204 in determining whether the application is directed to statutory subject matter, and in particular to the following passages of Pratte, J.:

> In order to determine whether the application discloses a patentable invention, it is first necessary to determine what, according to the application, has been discovered.

and

> I am of opinion that the fact a computer is or should be used to implement discovery does not change the nature of that discovery. What the appellant claims as an invention here is merely the discovery that by making certain calculations according to certain formulae, useful information could be extracted from certain measurements. This is not, in my view, an invention within the meaning of Section 2.

Applicant has described a method of pattern recognition which he states "lies in the novel manner and the whole concept of utilizing threshold values of a signal which is a function of the characteristics of the pattern to be read and comparing it with a staunch standard signal followed by the multiplication of a threshold inseriatum so that the threshold value is varied according to external conditions". By calculating the difference between data representing a new sample and previously stored data representing previous samples the applicant is able to reduce the memory

requirements for a standard memory in a pattern recognition system by establishing acceptable threshold values for new data to be stored in the system. When a new sample falls within the acceptable threshold values it is not stored as representing a useful new example but if it falls outside the threshold values it is stored as part of a standard for the pattern. In our view the system provides a useful end result by utilizing a threshold value for accepting or rejecting further samples for pattern recognition. We are satisfied that the application is directed to patentable subject matter.

We note that the amended claim defines a method of pattern recognition of similar pattern groups wherein data signals of the groups are compared along with differences from the predetermined initial threshold values assigned to them and subsequent, calculated threshold values to determine storage of data signals. We are satisfied the application discloses and does claim features of recognizing patterns of objects that present more than calculations to convert a set of values into another set of values. We are persuaded that the claim is directed to allowable subject matter, and in the absence of any cited art, may be allowable.

We recommend that the rejection of the application for being directed to non-statutory subject matter, be withdrawn.

M.G. Brown
Acting Chairman
Patent Appeal Board

S.D. Kot
Member

I concur with the findings and recommendations of the Patent Appeal Board. Accordingly, I withdraw the Final Action, and I am remanding the application to the Examiner for prosecution consistent with the recommendation.

J.H.A. Gariépy
Commissioner of Patents

Dated at Hull, Quebec
this 10th day of June 1987

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