THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SHAY-PING T. WANG

Appeal No. 96-3513
Application No. 08/220,772[1]

ON BRIEF

Before JERRY SMITH, GROSS, and FRAHM, Administrative Patent Judges.

GROSS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 through 11, 13 through 15, and 17 through 21, which are all of the claims pending in this application.

[1] Application for patent filed March 31, 1994.

The appellant's invention relates to an output-processing circuit using at least one latch and at least one adder circuit to produce neural network outputs. Claim 1 is illustrative of the claimed invention, and it reads as follows:

> 1. A processing circuit for processing the output of an artificial neuron, said neuron generating a sequence of outputs, said processing circuit being coupled to said neuron outputs and to an output gating function, said processing circuit comprising:
>
> a latch responsive to one of said neuron outputs and to said output gating function, said latch generating an output representative of said neuron output or zero, depending upon the value of said output gating function; and
>
> an adder circuit for generating an output, said adder circuit being responsive to said latch output and to its own output.

The prior art reference of record relied upon by the examiner in rejecting the appealed claims is:

Krutz et al. (Krutz)	3,707,621	Dec. 26, 1972

Claims 1 through 11, 13 through 15, and 17 through 21 stand rejected under 35 U.S.C. § 103 as being unpatentable over Krutz.

Reference is made to the Examiner's Answer (Paper No. 12, mailed February 12, 1996) for the examiner's complete reasoning in support of the rejection, and to the appellant's Brief (Paper No. 10, filed November 15, 1995), Supplemental Brief (Paper No. 16, filed February 17, 1999), and Reply Brief (Paper No. 13, filed April 15, 1996) for the appellant's arguments thereagainst.

OPINION

As a preliminary matter, we note that appellant indicates on page 3 of the Brief (with reasons as set forth in 37 CFR §§ 1.192(c)(5) and (c)(6)) that the claims do not stand or fall together. Appellant groups the claims as follows: (1) claims 1, 4, 7, 10, 11, 13 through 15, and 17 (2) claims 2, 3, 5, 6, 8, 9, 19, and 21, and (3) claims 18 and 20. We will treat claim 1 as representative of Group 1 and claim 18 as representative of Group 3.

We have carefully considered the claims, the applied prior art reference, and the respective positions articulated by the appellant and the examiner. As a consequence of our

review, we will reverse the obviousness rejection of claims 1 through 11, 13 through 15, and 17 through 21.

Claim 1 requires "a latch responsive to one of said neuron outputs and to said output gating function; and an adder circuit . . . responsive to said latch output and to its own output." Krutz includes a latch following an adder circuit, such that the adder circuit is responsive to an input and the latch output (which is the same as the adder circuit output). The examiner states (Answer, page 2), that

> Krutz forms the new total before it is known if the applied number is or is not to be included in the total to be stored in flip-flops 160. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Krutz by placing a gated latch before the adder, rather than after the adder, because the same function is being performed, namely the selective addition of a plurality of numbers.

The examiner further asserts (Answer, page 3) that

> Krutz states . . . that he places the latch after the adder to increase the processing speed, thereby implying that the latch <u>could be</u> placed before the adder. Furthermore, one of ordinary skill in the art would readily realize that the latch location does not affect the function performed. (emphasis added)

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988); Stratoflex Inc. v. Aeroquip Corp., 713 F.2d 1530, 1535, 218 USPQ 871, 876 (Fed. Cir. 1983); In re Warner, 379 F.2d 1011, 1016, 154 USPQ 173, 177 (CCPA 1967), cert. denied, 389 U.S. 1057. In so doing, the examiner is required to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley, 837 F.2d 1044, 1052, 5 USPQ2d 1434, 1439 (Fed. Cir. 1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984); In re Sernaker, 702 F.2d 989, 994, 217 USPQ 1, 5 (Fed. Cir. 1983).

The examiner in the present case has found an implication in Krutz that the latch "could be" placed before the adder circuit, but provides no teaching, suggestion, or implication from the prior art as to why one of ordinary skill in the art would have been motivated to do so. As pointed out by appellant (Brief, page 4), "In no instance does the cited reference suggest configuring of elements as required by the appealed claims." Accordingly, the examiner has failed to establish a prima facie case of obviousness for claims 1, 4, 7, 10, 11, 13 through 15, and 17, and the claims dependent therefrom, claims 2, 3, 5, 6, 8, and 9.

In addition, appellant recites in the preamble of claim 1 a "processing circuit for processing the output of an artificial neuron said neuron generating a sequence of outputs, said processing circuit being coupled to said neuron outputs" (underlining added for emphasis). Further, the body of the claim refers to "said neuron outputs." The examiner contends (Answer, page 3) that the phrase "neuron output" is "the mere labeling of a number or signal." However, "neuron output" refers to the output of a neuron circuit, which is the building block of an

artificial neural network, which in turn refers to specific structures. The terms "neural network" and "neuron output" are used throughout the specification as the only type of environment and input for the system, respectively, clearly indicating that the inventor intended to encompass artificial neural networks. Accordingly, "neuron output" is not merely a label. Krutz does not teach or suggest neuron outputs. In the absence of any suggestion by Krutz, the system of Krutz is not a neural network and does not involve neuron outputs. As such the Krutz reference is insufficient to establish a prima facie case of obviousness.

Independent claims 4, 7, 10, and 14 all include the phrases of "artificial neurons" and "neuron outputs" in the preamble and body of the claims, in the same way as claim 1. Similarly, independent method claims 18 and 20 include steps which act upon neuron outputs. Since Krutz is not a neural network or rather does not involve neuron outputs, the examiner has not accounted for all of the limitations of the

claims and therefore has failed to establish a prima facie case of obviousness. Accordingly, we cannot sustain the rejection of claims 1 through 11, 13 through 15, and 17 through 21.

CONCLUSION

The decision of the examiner rejecting claims 1 through 11, 13 through 15, and 17 through 21 under 35 U.S.C. § 103 is reversed.

REVERSED

JERRY SMITH Administrative Patent Judge	)	
ANITA PELLMAN GROSS Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
ERIC FRAHM Administrative Patent Judge	)	

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