The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte XING LI, MICHAEL E. MEYERS and FRANCIS K. TSE

Appeal No. 2002-1550
Application No. 09/158,884

ON BRIEF

Before KRASS, RUGGIERO and DIXON, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1-9, all of the pending claims.

The invention is directed to a system of image segmentation. An image is classified, on a per pixel basis, into one of several possible classifications. Features of a pixel matrix, or a window, which may be extracted for classification purposes, are the

peak and valley count within a window containing the pixel to be classified, and the local roughness.

Representative independent claim 1 is reproduced as follows:

1. An apparatus for classifying image data comprising:

an input device that receives the image data;

a peak/valley detection device that receives the image data and determines one of a peak count and a valley count within a window of the image data around a pixel under consideration, wherein the window includes a plurality of subwindows, and the peak/valley detection device detects the greater of the peak count and the valley count for each subwindow; and

a classification device that determines a class of the pixel under consideration based on the greatest of the peak counts of the peaks within the subwindows and the valley counts of the valleys within the subwindows.

The examiner relies on the following reference:

Ohuchi	5,025,481	Jun. 18, 1991

Claims 1-9 stand rejected under 35 U.S.C. §102 (b) as anticipated by Ohuchi.

Reference is made to the briefs and answer for the respective positions of appellants and the examiner.

OPINION

Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed

invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.1984); cert. dismissed, 468 U.S. 1228 (1984); W.L. Gore and Assoc., Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

With regard to claim 1, the examiner applies Ohuchi to the claimed subject matter by pointing to Ohuchi's element 11 in Figure 3 as the claimed "input device that receives the image data." The examiner identifies a peak/valley detection device in Figures 3 and 4 and column 6, lines 2-10, contending that the window, within which the peak count and valley count is determined, includes a plurality of subwindows shown in Figure 6. The examiner points to Figures 8 and 17, column 6, lines 4-27, column 8, lines 10-20 and column 20, lines 49-52, for a showing that the peak/valley detection device detects the greater of the peak count and the valley count for each subwindow, noting that P in Ohuchi represents the larger sum of peaks or valleys. For the claimed "classification device . . .," the examiner points to column 9, lines 14-58, in addition to the portions of Ohuchi cited for the "peak/valley detection device . . .," supra.

It is our view that the examiner has established a prima facie case of anticipation with regard to the subject matter of instant claim 1.

Appellants argue that Ohuchi does not use the peak and valley count within any particular block when it classifies a pixel in the block (see principal brief-page 11). We disagree.

At the top of column 3 of the patent, it is disclosed that extreme points (peaks and valleys) corresponding to each of the blocks are counted and the larger one of the counted extreme points in each block is determined. Then, a discriminating step discriminates whether or not a predetermined picture element within an object block belongs to a dot region **based on the relationship of the number of extreme points of the object block and the numbers of extreme points of the blocks surrounding the object block.** Accordingly, it appears that Ohuchi does use the peak and valley count in a block for classifying a pixel.

Appellants also argue, at page 11 of the principal brief, that whereas the instant invention requires the classification device to determine a class of a pixel based on the greatest peak or valley count, after the peak/valley detection device determines the peak count and the valley count within each subwindow for the particular pixel, Ohuchi teaches that a pixel is classified solely based on the counts of blocks that meet a threshold, regardless of the actual peak and valley count.

We agree with the examiner that according to the language of claim 1, a class of pixel is classified “based on the greatest of the peak counts of the peaks within the

subwindows and the valley counts of the valleys within the subwindows" and this would include a classification **indirectly** based and/or **not exclusively** based on the greatest of the peak and valley counts. Clearly, as pointed out by the examiner, since a parameter Pi is assigned to each subwindow, indicative of the larger number of either peak counts or valley counts within that subwindow (referring to column 6, lines 4-27, column 8, lines 10-20, column 18, lines 15-31, column 19, lines 8-22 and column 20, lines 39-52), and the classification of an object pixel is determined by counting the number of subwindows which satisfy P>Pth is greater than a predetermined threshold Bth (column 7, lines 9-16), the largest value P is used in some manner to determine the number of subwindows and, therefore, the classification of the pixel since all Pi of the subwindows are compared to the threshold Pth to find the number of the subwindows satisfying the threshold (answer-page 5). Thus, Ohuchi discloses a classification device that determines a class of the pixel under consideration based on the greatest of the peak counts of the peaks within the subwindows and the valley counts of the valleys within the subwindows, as claimed.

While appellants argue, at page 12 of the principal brief, that Ohuchi's classification device does not base the classification on the peak and valley count "of any particular block" when it classifies that pixel, we do not find such language in claim 1. Accordingly, the argument is immaterial. Similarly, because the language of

claim 1 contains nothing about “improving the halftone dot count,” the argument directed to this non-claimed feature (principal brief-page 12) is not persuasive.

Accordingly, the rejection of claims 1, 3, 7 and 8 under 35 U.S.C. §102 (b) is sustained.

Turning now to claim 2, this claim adds the limitation of a “local roughness device that determines a local roughness of the input image...” The examiner explains that Ohuchi determines such a local roughness, at column 18, lines 39-61, by referring to $|\Delta m|$, an absolute value of a density difference between density levels of a center picture element and each of the surrounding picture elements.

Appellants’ response is merely to state that the “local roughness according to the present invention is different in both terms of design and in terms of purpose” (principal brief-page 13). Since appellants have not indicated any specifics as to how or why the instant invention’s “local roughness” is different from that asserted by the examiner as being taught by Ohuchi, and the examiner’s rationale appears, at first blush, to be reasonable, we will sustain the rejection of claim 2 under 35 U.S.C. §102 (b). Appellants do not contend that any specific meaning should be ascribed to the term “local roughness” as per the instant specification and claim 2 clearly ascribes no particular meaning to this term.

With regard to independent claim 4, but for the argument re determining the halftone dot count, appellants' arguments here are the same as for independent claim 1.

We will not sustain the rejection of claims 4-6 and 9 under 35 U.S.C. §102 (b) because independent claim 4 requires "determining the halftone dot count for a pixel under consideration . . .". The examiner's only treatment of this limitation is to say, at page 3 of the answer, that this is taught by Ohuchi at "col. 6 lines 4-27, col. 8 lines 10-20, col. 20 lines 49-52 note that p is constituted for the halftone dot counts." Since there is no indication in Ohuchi that there is any determination of a "halftone dot count," it was up to the examiner to give a more convincing explanation as to how/why "p" is considered to indicate such "halftone dot counts." The examiner has not convinced us of any reason for finding a determination of a "halftone dot count . . ." in Ohuchi. Accordingly, we find no prima facie case of anticipation made out by the examiner with regard to claims 4-6 and 9 and we will not sustain the rejection of these claims under 35 U.S.C. §102 (b).

We have sustained the rejection of claims 1-3, 7 and 8 under 35 U.S.C. §102 (b) but we have not sustained the rejection of claims 4-6 and 9 under 35 U.S.C. §102 (b).

Accordingly, the examiner's decision is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

ERROL A. KRASS Administrative Patent Judge	)	
JOSEPH F. RUGGIERO Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
JOSEPH L. DIXON Administrative Patent Judge	)	

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