Paper No. 35

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HENRY S. BAIRD

Appeal No. 96-1990
Application 07/536,910[1]

ON BRIEF

Before BARRETT, LEE and CARMICHAEL, Administrative Patent Judges.

LEE, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 6-34, 36-38, and 40-41. No claim has been allowed.

Reference relied on by the Examiner

Leung et al. (Leung), "A Distortion Model for Chinese Character Generation," IEEE 1985 Proceedings of the International Conference on Cybernetics and Society, Tucson, Arizona, November

[1] Application for patent filed June 12, 1990.

12-15, 1985, pp. 38-41.

The Rejections on Appeal

Claims 6-34, 36-38 and 40-41 stand finally rejected under 35 U.S.C. § 103 as being unpatentable over Leung.

The Invention

The invention is directed to a method and apparatus for generating defective pixel representations of character images and also to a method and apparatus for using the generated defective pixel representations to infer or train an optical image classifier. The classifier should recognize the intended character despite defective pixel representations of the same.

A user can select one or more defective class parameters each of which specifies a corresponding class of defective pixel representation. A set of defective pixel representations is generated which belongs to the defect class specified by the user selected defect class parameters.

Representative claims 6 and 20 are reproduced below:

6. A method of generating examples of defective pixel representations of symbols comprising the steps of:

receiving one or more defect class parameters selected by a user from a plurality thereof, each defect class parameter specifying a class of pixel representation defects;

receiving a set of one or more model symbols; and

generating a set of defective pixel representations of the symbols from the set of model symbols in response to the defect class parameters, the defective pixel representations including pixel representation defects belonging to the defect classes specified by the defect class parameters.

20. Apparatus for generating examples of defective pixel representations of symbols comprising:

means for receiving a set of one or more defect class parameters selected by a user of the apparatus from a plurality thereof, each defect class parameter specifying a class of pixel representation defects;

a set of one or more model symbols; and

means for making a set of defective pixel representations of the symbols from the set of model symbols in response to the defect class parameters, the defective pixel representations including pixel representation defects belonging to the classes specified by the defect class parameters.

Independent claims 34 and 38 are similar to claims 6 and 20 insofar as the generation of defective pixel representations are concerned. However, claims 34 and 38 further use the defective pixel representations to "infer" a classifier.

Opinion

We do not sustain the rejection of claims 6-34, 36-38 and

40-41.

All of the independent claims require the generation of defective pixel representations according to particular user-selectable classes of pixel representation defects. Specifically, one or more defect class parameters selected by a user from among a plurality of defect class parameters is received whereby each defect class parameter specifies a corresponding class of pixel representation defects. A set of defective pixel representations is generated wherein the pixel representation defects are those belonging to the defect class or classes specified by the defect class parameters. In this manner, the set of defective pixel representations to be generated can be specifically tailored to user-selectable classes of pixel representation defects.

We reject the appellant's argument that Leung "has nothing whatever to do with pixel representations" (Br. at 8). Variations in the slope of the strokes of Chinese characters and in the size of various subparts of the same Chinese characters yield pixel representation defects as compared to the model or perfect Chinese characters. As is explained in the Background portion of the appellant's specification (at 1), defective pixel representations can come from many sources, including dirt or

folds on the paper, skewed positioning of the printing paper, or even the optics of the scanning process. In such light, there is no reason to exclude poor handwriting as a source of defective pixel representation. Claim terms are properly construed according to their broadest reasonable interpretation consistent with the specification. In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); In re Yamamoto, 740 F.2d 1569, 1571, 222 USPQ 934, 936 (Fed. Cir. 1984); In re Pearson, 494 F.2d 1399, 1404, 181 USPQ 641, 645 (CCPA 1974); In re Prater, 415 F.2d 1393, 1404, 162 USPQ 541, 550 (CCPA 1969).

The appellant's main argument is correct, however, that "Leung generates defective characters for only a single class of defects, namely those resulting from variations in handwriting" (Br. at 8). While it is true that Leung discusses two types of handwriting variations, i.e., one resulting from different slopes for the same stroke in a Chinese character and the other resulting from different sizes for the same subparts of a Chinese character, Leung does not disclose or reasonably suggest generating different handwriting samples based on only one of the two types of variations. In Leung, the user does not select any particular class of defective pixel representations and the system does not receive any defect class parameter. Rather, the

set of generated samples always includes defects arising from the two types of predetermined handwriting variations, the slope of strokes and the size of subparts of characters. The appellant correctly states (Br. at 8) that "Leung cannot and does not permit the user to provide parameters which specify classes of defects and thereby to define his own model for the defects." (Emphasis in original.)

We reject the examiner's statement (answer at 4) that "[A]lthough the 'user' does not explicitly specify a 'set of one or more defect class parameters', some 'defect class parameters' are implicitly specified because of the imperfect nature of handwriting." We agree with the appellant that model symbols inputted by a user are not defect class parameters specifying particular classes of defects. The imperfect nature of handwriting is a basis to conclude that the model symbols are not perfect but is no reason to conclude that the symbols are defect class parameters specifying particular classes of defects.

In short, in Leung the class of defective pixel representation to be embodied in the set of generated samples is predetermined and also fixed. Shearing operations are performed to simulate different slopes in strokes and warping operations

are performed to simulate different relative sizes in the subpatterns of a character (Leung, pp. 38-39). Both shearing and warping operations are performed no matter what the model symbols are. Leung, alone, would not have reasonably suggested the inputting of user selected defect class parameters and the generation of defective pixel representations according to the defect classes specified by the inputted defect class parameters. We agree with the appellant (Br. at 10) that the claimed invention permits the user to define his or her own defect model and to generate defective pixel representations corresponding to the defined model by selecting from among a number of defect classes. Leung, on the other hand, does not disclose or suggest user-selection of particular defect classes to tailor or customize the output pixel representations to the desired or preferred defect classes.

For the foregoing reasons, we reverse the rejection of claims 6-34, 36-38 and 40-41 under 35 U.S.C. § 103 as being unpatentable over Leung.

Conclusion

The rejection of claims 6-34, 36-38, and 40-41 under 35 U.S.C. § 103 as being unpatentable over Leung is reversed.

REVERSED

LEE E. BARRETT Administrative Patent Judge	)
JAMESON LEE Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES

JAMES T. CARMICHAEL)
Administrative Patent Judge)

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