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D E C I S I O N
of 4 November 2005

Case Number: T 0725/01 - 3.5.01

Application Number: 92115725.1

Publication Number:

IPC:

Language of the proceedings: EN

Title of invention:
Method for recognizing object images and learning method for neural networks

Applicant:
Fuji Photo Film Co., Ltd.

Opponent:
-

Headword:
Image recognition/FUJI PHOTO FILM

Relevant legal provisions:
EPC Art. 111(1)

Keyword:
"Decision re appeals - remittal (yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0725/01 - 3.5.01

D E C I S I O N
of the Technical Board of Appeal 3.5.01
of 4 November 2005

Appellant: FUJI PHOTO FILM CO., LTD.
210 Nakanuma
Minami-Ashigara-shi,
Kanagawa-ken (JP)

Representative: Klunker . Schmitt-Nilson . Hirsch
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 6 February 2001 refusing European application No. 92115725.1 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: S. Steinbrener
Members: R. Zimmermann
G. Weiss

Summary of Facts and Submissions

I. European patent application number 92 115 725.1 (publication number 0 532 053) concerning the recognition of an object image by artificial neural networks was, after amendment of the application, refused by the examining division in a decision dated 6 February 2001. The reasons given for the refusal of the application were lack of inventive step in independent claims 1 and 2, lack of clarity in claim 2, and lack of novelty in independent claim 36.

II. The appellant filed a notice of appeal and paid the due appeal fee on 23 March 2001. A written statement setting out the grounds of appeal was filed on 11 June 2001. In response to a communication of the Board the appellant filed two sets of amended claims as auxiliary requests I and II on 4 October 2005.

III. In oral proceedings held on 4 November 2005 the Board decided on the appeal, after discussing the matter in issue with the appellant's representative. At the oral proceedings the representative requested to replace all the previous requests by a single request. According to this request, the decision under appeal should be set aside and a patent should be granted on the basis of the single request (former auxiliary request II with claim 10 replaced by claim 10 submitted at the oral proceedings) or, alternatively, the case should be remitted to the first instance for further prosecution on the basis of this request.

The only independent claims, claims 1 and 10, of the single request read as follows:

Claim 1: "1. A method for recognizing an object image, the method being carried out in an artificial neural network and comprising the steps of:
extracting a candidate for a predetermined object image from an image, the object image being defined by a contour line of an object, and
making a judgment as to whether the extracted candidate for the predetermined object image is or is not the predetermined object image,
wherein the extraction of said candidate for the predetermined object image is carried out by:
causing the center point of a view window, which has a predetermined size, to travel to the position of said candidate for the predetermined object image, and
determining an extraction area in accordance with the size and/or the shape of said candidate for the predetermined object image, the center point of said view window being taken as a reference during said determination, and further comprising the steps of:
a) cutting out an image, which falls in a region inside of said view window from said image,
b) detecting a contour line of said candidate for the predetermined object image, which line extends in a predetermined direction, from said cut-out image,
c) extracting all of components of said detected contour line, which are tilted at a predetermined angle with respect to contours of a group of concentric circles surrounding the center point of said view window, from said detected contour line of said candidate for the predetermined object image,
d) detecting azimuths and intensities of said extracted components with respect to the center point of said view window, the azimuths and the intensities being

detected as azimuth vectors,
e) composing a vector from said azimuth vectors, a vector for a travel of said view window being thereby determined, and
f) causing the center point of said view window to travel in accordance with said vector for the travel of said view window."

Claim 10: "A learning method for an artificial neural network, which comprises the steps of:
extracting a target object image, for which learning operations are to be carried out, from an image, the object image being defined by a contour line of an object,
feeding a signal, which represents the extracted target object image, into the neural network, and
carrying out the learning operations of said neural network in accordance with said input target object image,
wherein the extraction of said target object image, for which learning operations are to be carried out, is carried out by:
causing the center point of a view window, which has a predetermined size, to travel to the position of said target object image, and
determining an extraction area in accordance with the size and/or the shape of said target object image, the center point of said view window being taken as a reference during the determination of said extraction area, and further comprising the steps of:
a) cutting out an image, which falls in a region inside of said view window, from said image,

b) detecting a contour line of said target object image, which line extends in a predetermined direction, from said cut-out image,
c) extracting all of components of said detected contour line, which are tilted at a predetermined angle with respect to contours of a group of concentric circles surrounding the center point of said view window, from said detected contour line of said target object image,
d) detecting azimuths and intensities of said extracted components with respect to the center point of said view window, the azimuths and the intensities being detected as azimuth vectors,
e) composing a vector from said azimuth vectors, a vector for the travel of said view window being thereby determined, and
f) causing the center point of said view window to travel in accordance with said vector for the travel of said view window."

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rules 1(1) and 64 EPC and is thus admissible.

2. The appeal is also allowable since the appellant's single request changed and removed the basis on which the decision under appeal was given. The decision can thus not be upheld. Moreover, considering the amendments requested, the case seems to afford a reasonable prospect of success in continuing the grant procedure before the EPO.

3. In fact, the request considerably limits the scope of the claimed invention in substance, if compared with the claims which have been examined by the examining division in the first instance. Since the amended claims have been admitted, it is necessary to re-examine the application on its merits. This examination should be done by the examining division, which is, according to Article 18(1) EPC, responsible for the examination of European patent applications. The Board thus decides to remit the case to the examining division in accordance with Article 111(1) EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of the first instance for further prosecution.

The Registrar: The Chairman:

M. Kiehl S. V. Steinbrener