

Internal distribution code:

- (A) [-] Publication in OJ
- (B) [-] To Chairmen and Members
- (C) [-] To Chairmen
- (D) [X] No distribution

**Datasheet for the decision
of 5 November 2020**

Case Number: T 0894/20 - 3.5.06

Application Number: 14154828.9

Publication Number: 2793166

IPC: G06K9/00, G06K9/32, H04N5/232,
H04N5/77, H04N5/907, H04N9/804

Language of the proceedings: EN

Title of invention:

Target-image detecting device, control method and control program thereof, recording medium, and digital camera

Applicant:

OMRON CORPORATION

Headword:

Target-image detection in a digital camera/OMRON

Relevant legal provisions:

EPC Art. 123(2), 111(1)

Keyword:

Amendments - added subject-matter (no)
Remittal to the department of first instance - (yes)

Decisions cited:

Catchword:



Beschwerdekammern
Boards of Appeal
Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0894/20 - 3.5.06

D E C I S I O N
of Technical Board of Appeal 3.5.06
of 5 November 2020

Appellant:
(Applicant)
OMRON CORPORATION
801, Minamifudodo-cho,
Horikawahigashiiru,
Shiokoji-dori,
Shimogyo-ku
Kyoto-shi, Kyoto 600-8530 (JP)

Representative:
Kilian Kilian & Partner
Aidenbachstraße 54
81379 München (DE)

Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 10 October 2019
refusing European patent application No.
14154828.9 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman M. Müller
Members: A. Teale
B. Müller

Summary of Facts and Submissions

- I. This is an appeal against the decision, dispatched with reasons on 10 October 2019, to refuse European patent application No. 14 154 828.9 on the basis that claim 1 according to a main and two auxiliary requests did not comply with Article 123(2) EPC regarding added subject-matter.
- II. A notice of appeal and the appeal fee were received on 5 December 2019. The appellant requested that the decision be set aside in its entirety.
- III. With a statement of grounds of appeal, received on 17 February 2020, the appellant refiled the claims according to a main and first and second auxiliary requests on which the decision was based and requested that a patent be granted on the basis of one of said requests.
- IV. In an annex to a summons to oral proceedings the board set out its provisional opinion that it agreed with the appellant that the reasons for the appealed decision did not show that the application according to either the main or the auxiliary requests contained added subject-matter, Article 123(2) EPC. However the board had doubts whether the correction of the original term in the description, claims and drawings "hysteresis" to "history" complied with Article 123(2) EPC. The oral proceedings would be limited to this point alone.
- V. With a response received on 25 September 2020 the appellant submitted a new description and set of drawings to replace those on file.

VI. In a communication dated 15 October 2020 the board pointed out that the last figure of the drawings still referred to "history", so that the application did not comply with Article 123(2) EPC. If this objection were overcome, then the board envisaged cancelling the oral proceedings. In a response received on 16 October 2020 the appellant filed a new page of drawings addressing this objection. The board then cancelled the oral proceedings.

VII. The application is being considered in the following form:

Description (all requests):

pages: 1 to 26, received on 25 September 2020.

Claims (all refiled with the grounds of appeal):

Main request: 1 to 6.

First auxiliary request: 1 to 6.

Second auxiliary request: 1 to 6.

Drawings (all requests):

Pages 1/3 and 2/3, received on 25 September 2020, and 3/3, received on 16 October 2020.

VIII. Claim 1 according to the main request reads as follows:

"A target-image detecting device configured to detect a target image as a part of a photographed image, comprising:

a memory unit (21) configured to store information;

an obtaining unit (30) configured to sequentially obtain a plurality of photographed images being

sequentially obtained frames configuring a moving image;

a detecting unit (31) configured to detect a respective target image of a target object included in a respective frame obtained by the obtaining unit (30), to generate a respective detection result for the detected target image of the target object included in said frame and to accumulate the generated detection result in the memory unit (21), wherein detecting unit (31) is configured to accumulate generated detection results with respect to the respective frames in the memory (21) in a sequence of obtaining the respective frames by the obtaining unit (30),

wherein the detecting unit (31) is adapted to, if a respective target image of a target object has been detected in a respective frame, accumulate respective identification information, being an object ID, for identifying the respective detected target image of the respective target object in the memory unit (21) by relating the respective object ID to the respective detection result of the respective target image, and

wherein, when a target image, detected in a frame presently obtained by obtaining unit (30), of which a target object is the same as that of the target image detected in a frame the detection result of which was accumulated in the memory (21) in the past, the detecting unit (31) is adapted to accumulate, in the memory unit (21), a respective object ID that is the same as the respective object ID of the target image detected in a frame the detection result of which was accumulated in the memory (21) in the past by relating the same object ID to the respective detection result

of the target image detected in the frame presently obtained by obtaining unit (30);

wherein, when the target image, detected in the frame presently obtained by obtaining unit (30), of which the target object is not the same as that of the target image detected in a frame the detection result of which was accumulated in the memory (21) in the past, the detecting unit (31) is adapted to accumulate, in the memory unit (21), a respective new object ID by relating the new object ID to the respective detection result of the target image detected in the frame presently obtained by obtaining unit (30); and

a deciding unit (32) configured to refer to the detection results stored in the memory unit (21) and to decide whether a detection result of a target image of the same target object is included in a latest predetermined number of detection results, accumulated in the memory (21) and being two or more, by deciding whether a same object ID as the object ID, received from the detecting unit (31), of the detection result of the target image detected in the frame presently obtained by obtaining unit (30) is included in the latest predetermined number of detection results, to output the object ID to a detection-mark generating unit (33) when a same object ID is included in the latest predetermined number of detection results, and not to output the object ID to the detection-mark generating unit (33) when no same object ID is included in the latest predetermined number of detection results, wherein

the detection-mark generating unit (33) is configured to generate an image of the detection mark on the basis of the detection results in the memory corresponding to

the respective object ID upon obtaining the respective object ID from the deciding unit (33)."

- IX. Claim 1 according to the first auxiliary request differs from that according to the main request in the addition of the following passage (regarding the detecting unit) "the detection result including an object ID of a detected face image, feature information, size, and position information" and the passage (regarding the detection-mark generating unit) "by searching the size and position information corresponding to the obtained object ID, from the detection result in the memory and generating the image of a detection mark in accordance with the searched size and position information". These features have also been added to independent method claim 6. In claim 1, in addition to editorial amendments, multiple instances of the expression "frame" have been replaced by "photographed image".
- X. Claim 1 according to the second auxiliary request differs from that according to the previous request in the addition of the following passage (relating to the detecting unit): "in case a target image of an [sic] target object is detected in a respective photographed image and including no object ID in case no target image of an [sic] target object is detected in a respective photographed image". The same passage has also been added to independent method claim 6. In claim 1, in addition to editorial amendments, the expressions "in a latest predetermined number of detection results", "at least said predetermined number", "including detection results having the same object ID and having no object ID" and "in the latest predetermined number" have been added.

Reasons for the Decision

1. Admissibility of the appeal

In view of the facts set out at points I to III above, the appeal fulfills the admissibility requirements under the EPC and is consequently admissible.

2. A summary of the invention

2.1 The application relates to automatically recognising a "target image", such as a face or a region of text, in an image, for instance in order to optimize a photograph or to carry out OCR (Optical Character Recognition), in an imaging device such as a digital camera; see [16, 19] and figure 1.

2.2 The application addresses the problem of intermittent detection of a target image, meaning, for instance, that a "detection mark" such as a frame is not always displayed around the target image; see [6]. Figure 10 illustrates what can happen with a digital camera (see also [34-36]), namely that usually only one face is recognised (the dog), but on occasions a further face is recognised (the bear); see figures 10B and 10F.

2.3 The invention aims to avoid outputting a "detection result of an erroneously detected target image"; see [7]. Figure 2 shows what the invention achieves: continuous detection of only one face, namely that of the dog. The board consequently understands the problem solved by the invention to be avoiding the intermittent detection of a target image.

2.4 This is achieved by storing sequential images, together forming a moving image, and accumulating the detection

results in memory (originally termed "detection hysteresis"; see below). A deciding unit uses the detection results to determine whether the detection result of a target image of the same target object is included in a latest predetermined number of detection results; see [8]. A detection frame is displayed when a face image has been continuously detected more than a threshold value of times, for example twice; see figure 1; 41 and page 12, lines 16 to 18.

3. Added subject-matter, Article 123(2) EPC

3.1 The original disclosure

Original paragraphs [38-45] in conjunction with figures 1 and 5 disclose a target-image detecting device comprising a detecting unit which detects (31) a face ("target image" in the claims) in a sequence of photographed images and accumulates (31) (see paragraph [42], third to fifth lines) detection results in a memory unit (40) "as detection hysteresis". In the light of the consecutive frames shown in original figure 5 (since deleted), the board understands a "detection result" as the recognition of a particular target image, for instance "ID1", in a particular frame. Accumulating the detection result is understood to be calculating the total number of occurrences of the same target image in consecutive frames, the total then being compared with a threshold such as two; see original paragraph [59]. This is also referred to as "proper" detection (see, for instance, paragraph [44]).

3.2 The deletion of the expression "detection hysteresis"

In response to a communication by the board the appellant has deleted all instances of the term

"detection hysteresis" from the application. The board finds that this amendment does not add subject-matter, Article 123(2) EPC, as "detection hysteresis" is understood, in the context of the application, to be a synonym of "accumulated detection result"; see original paragraph [8], 9th to 10th lines.

3.3 The main request

3.3.1 According to the decision, the expression in claim 1 of the main request "to accumulate detection results with respect to the respective frames in the memory" had no basis in the application as filed. The applicant had conceded that there was no explicit disclosure of this feature but argued, referring to paragraphs [36, 39 and 43] and figures 2 and 5 to 8, that it was the only way to determine whether a specific target object had also been detected in previous frames. The decision states that there is no disclosure of a detection result containing a frame number in which it was detected. The description did not mention the frames shown in figures 5 to 8 being stored in memory. Moreover a detection result did not need to contain a frame number. In the case of the consecutive frames shown in figure 2 (see also [36]), it was sufficient to store a counter and a bit flag for each detection result, the bit flag indicating whether the counter had been increased in the previous frame. Hence the above feature was not explicitly disclosed.

3.3.2 The appellant has argued that the skilled person is an experienced practitioner, in this case an engineer in the field of computer science, aware of the common general knowledge in their technical field. The limits of Article 123(2) EPC were defined by what a skilled person would derive directly and unambiguously, using

common general knowledge, and seen objectively and relative to the date of filing from the application as a whole, meaning the description, claims and drawings. This definition did not require literal support for an amendment, an implicit disclosure sufficed. The appellant denied stating that the storage of detection results in the memory in association with a respective frame number was the **only** way to determine whether a detection result had been detected in previous frames. Instead the appellant argued that the skilled person would have understood this from the application as a whole. The examining division had merely regarded specific features and paragraphs in the application in isolation. The skilled person would have understood that detection results were stored and accumulated in the memory, which corresponded to the storage of one or more detection results with respect to each frame. Figure 5 showed one detection result (ID1) being stored for the first frame, but two results (ID1, ID2) being stored for the second frame. Paragraph [50] referred to input and output data for the proper-detection deciding unit 32 for each frame. In other words, detection results were accumulated in a frame by frame manner. The examining division's interpretation of a detection history as a counter and a bit flag for each detection result was thus not consistent with the overall disclosure of the application as a whole, so that subject-matter had not been added to the application.

- 3.3.3 The board takes the view that, in the context of the application, the expression in claim 1 of the main request "to accumulate detection results with respect to the respective frames in the memory" sets out the same features as the expression in original paragraph [42] "The face detecting unit 31 accumulates a detection result of the detected face image ... in

the ... memory 40 ...", in combination with the statement in paragraph [44] "the proper-detection deciding unit 32 ... decides whether the face ID ... is included in the detection hysteresis of latest predetermined number ... of frames." The total number of detection results for a particular face (ID1, ID2, etc.) is calculated, it being of importance which frame a detection result occurs in (hence "with respect to the respective frames"), so that the total applies to consecutive frames.

3.3.4 As the expression in claim 1 of all requests "to accumulate detection results with respect to the respective frames in the memory" does no more than paraphrase the original disclosure in paragraphs [42] and [44], the board finds that it does not add subject-matter.

3.3.5 Moreover the fact that the claimed accumulation of detection results covers the use of a counter and a bit flag for each detection result does not require that a counter and bit flag be disclosed in the application as originally filed in order to satisfy Article 123(2) EPC, because the broad formulation claimed finds direct disclosure in the application as originally filed.

3.4 The first and second auxiliary requests

3.4.1 According to the appealed decision, the expression in claim 1 of both requests "to generate respective detection results for each of said plurality of photographed images" could be understood as either an N:1 or a 1:1 mapping between detection results and photographed images, there being no disclosure (see in particular [10, 33, 42, 44, 52]) of a 1:1 mapping. As a

matter of fact, the same feature is also included in claim 1 of the main request.

3.4.2 The appellant has argued that the refusal had been based on an evaluation of features/paragraphs taken in isolation rather than considering the disclosure of the original application as a whole.

3.4.3 The board takes the view that the skilled person would not read claim 1 as excluding an N:1 mapping, which obviously subsumes the 1:1 mapping for N=1. Claim 1 refers to individual detection results (one face in one image, see above, point 3.1) of possibly several faces (see, e.g., claim 1, page 2/6, line 11), which are accumulated and which form the basis for determining whether one (of several) faces has been "included in the latest predetermined number of detection results", i.e. frames (claims page 2/6, line 21-23). The skilled person would understand this wording as allowing more than one face per photographed image. The above expression is based on paragraph [42], third to fifth lines, in view of figures 2A to 2F and 10A to 10F, which sets out an N:1 mapping of detection results to photographed images. In other words, several faces ("target images" in the claims) can be detected in each frame. Hence the above expression has not added subject-matter.

3.5 Claim 1 of the main request is based on original claim 1 restricted using features from original paragraphs [38 to 45] and figure 5. Claim 6 is based on original claim 8 and sets out method steps corresponding to the apparatus features of claim 1. Independent claims 1 and 6 of the first auxiliary request have been restricted using features taken from paragraphs [46] and [39] of the original description. Independent claims 1 and 6

according to the second auxiliary request have been further restricted using features taken from paragraphs [57] and [58] of the original description and figure 7.

3.6 Hence the board is satisfied that the amendments to the application according to all three requests satisfy Article 123(2) EPC.

4. Remittal, Article 111(1) EPC

Inventive step was not a reason for the appealed decision. As the principal purpose of appeal proceedings is to review the decision under appeal, the board considers this, and the fact that this case was taken considerably out of turn so that there are another fourteen years of a potential twenty years patent term to run, to be special reasons, Article 11 RPBA 2020, for remitting the case to the examining division for further prosecution.

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 first instance for further prosecution.

The Registrar:

The Chairman:



L. Stridde

M. Müller

Decision electronically authenticated