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D E C I S I O N
of 30 September 1999

Case Number: T 0636/98 - 3.5.1

Application Number: 92911877.6

Publication Number: 0539565

IPC: H04N 7/00

Language of the proceedings: EN

Title of invention:
Omniview Motionless Camera Orientation System

Applicant:
Omniview, Inc.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (no)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0636/98 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 30 September 1999

Appellant: Omniview, Inc.
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Knoxville, TN 37921 (US)

Representative: Smaggasgale, Gillian Helen
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 23 January 1998 refusing European patent application No. 92 911 877.6 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: P. K. J. van den Berg
Members: R. S. Wibergh
V. Di Cerbo

Summary of Facts and Submissions

I. This appeal is against the decision of the Examining Division to refuse European patent application No. 92 911 877.6.

II. The Examining Division argued that the subject-matter of claim 1 was obvious having regard to

D1: JP-A-2 127877 (abstract and translation).

III. In a communication from the Board the rapporteur expressed the preliminary opinion that the main claim defined the invention in terms of a clearly desirable result to be achieved and its subject-matter was therefore not inventive.

IV. Oral proceedings before the Board were held on 30 September 1999. Ms Gillian Helen Smaggasgale, a professional representative, appeared for the appellant. She was accompanied by Mr Zimmermann, who stated that he was the inventor as well as a vice-president of the appellant company.

Before opening the oral proceedings the Board noted that there was no evidence on file that the professional representative, who had informed the Board only a few weeks before the oral proceedings (see letter received by EPO on 6 September 1999) that she had been appointed in the case, was authorised to act on behalf of the appellant. Nor was Mr Zimmermann able to give evidence of his position in the appellant company.

The representative was therefore asked to give evidence of her authorisation.

After a break granted for this purpose she submitted a faxed copy of the authorisation for her to act as the appellant's representative in these proceedings. However, the Board found that it carried a date and an illegible signature but contained no information about the authorising person.

The representative then expressly declared that the authorisation had in fact been signed by Mr Viglione, a vice-president of the appellant company.

By virtue of this declaration the Board concluded that there was no obstacle to proceeding with the hearing.

V. In the course of the oral proceedings the appellant filed new claims according to a main and an auxiliary request.

VI. Claim 1 of the **main request** read as follows (omitting the reference signs):

A signal processor for converting digital images for use in an omnidirectional image viewing system comprising:

a digital data memory adapted for storing digital data representing an image received from a fisheye lens;

a control input for receiving user input signals; and

a converter responsive to said control input, for

converting said stored digital data to digital data representing perspective corrected images;

characterised in that the control input signals represent viewing angles which are interpreted as directional selections for continuous navigation within the fisheye field of view and wherein the converter continuously and contiguously perspectively corrects the portion of the fisheye field of view for display and/or recordal.

VII. Claim 1 according to the **auxiliary request** was directed to a device for providing perspective corrected views of a selected portion of an image. Besides processor means the device comprised a fisheye lens and image capture means. It was specified that the processor produced an output according to a combination of the digitised image signals and the selected viewing angles.

VIII. The appellant argued that D1 did not render the invention obvious. It described a system of limited capacity which could not be generalised in an obvious way to obtain the processor as defined in claim 1.

IX. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main and an auxiliary request filed at the oral proceedings before the Board.

Reasons for the Decision

The main request

1. The invention is a signal processor which is capable of correcting selected parts of an image formed by means of a fisheye lens. As is well known, such lenses have a large (hemispheric) field of view but the images are severely distorted, especially at the periphery. According to the invention a user may select an angle within the field of view (for example by means of a joystick) and the processor corrects the part of the image centred at this angle to produce a view which closely resembles what the user would see through a normal (video) camera pointing in the indicated direction. The viewing angle can be continuously controlled yielding an effect comparable with what is obtained from a camera being tilted or panned. This smooth, user-controlled movement is referred to as "continuous navigation" in claim 1. Furthermore, the images are "continuously corrected", which should be interpreted in the way that the processor provides a view which is updated at real-time video rates and is thus basically equivalent to what is obtained by a standard video camera.

2. As to the form of claim 1, expressions are used which are not to be found in the description as filed and whose meaning might not be immediately clear even to a skilled reader. Still, the description explains the invention in considerable detail and, taken together with the appellant's explanations, leaves no doubt as to the intended interpretation of claim 1. It is therefore possible to examine this claim with respect

to inventive step.

3. *Inventive step*

3.1 According to the description of the present application, video cameras mounted on mechanical pan-and-tilt platforms are conventionally used for surveillance purposes. Such cameras have a limited field of view but can be moved in any desired direction. The weakness of these prior systems, it is said, is the platform. For example, collisions may occur with the working environment, causing damage to the camera. It would be advantageous if any mechanical movement of the camera could be avoided.

3.2 The skilled person, faced with this problem (which could not possibly remain unnoticed), would search the available literature for a camera which contains no mechanical parts but still offers a view comparable to that of the mechanical system.

3.3 The search would reveal D1. This document describes a still picture camera equipped with a fisheye lens and image processing means. There are no moving mechanical parts. The user selects one of nine predetermined areas of a hemispheric field of view and the system processes the corresponding image points to yield a corrected image of that area.

It is clear that this camera as it is described would not be perfectly suitable for the surveillance application. However, the skilled person would recognise that D1 is so close to what he was searching for - in particular, it provides a solution to the

collision problem - that he would not discard it but rather investigate whether its teaching could be adapted to his needs.

3.4 In doing so, he could not fail to identify the two drawbacks which have been pointed out by the appellant:

(1) the limitation to nine predetermined image areas (corresponding to nine different viewing angles); and

(2) the limitation to still pictures.

3.5 As to the first drawback, the appellant has argued that the camera system known from D1 could not be improved to permit arbitrary navigation throughout the field of view of the fisheye lens. The skilled person might at most try to increase substantially the number of selectable areas, but the requirements on the memory needed to store the corresponding perspective correcting algorithms would be prohibitive.

3.6 It is not denied that D1 discloses no solution to the problem of permitting continuous navigation. However, in the Board's opinion, this is not the decisive point. What matters is, as usual, whether the subject-matter of claim 1 is obvious in view of the prior art. In claim 1 it is specified that the user may input "viewing angles which are interpreted as directional selections for continuous navigation within the fisheye field". The continuous navigation is thus claimed as a result to be achieved. The only means indicated for obtaining the result is the input which is interpreted as directional selections. This feature concerns the

way the direction of view is selected and corresponds to the selection in D1 of one of the nine areas. It does not directly relate to the problem which the appellant has said to be unsolvable from D1, ie the **perspective correction** of an arbitrary image portion.

3.7 To avoid misunderstandings it should be stressed that the Board does not wish to state that a feature setting out a result to be achieved is always inappropriate to define an invention. However, such a feature (like any functional feature) is essentially a formulation of a technical problem in terms of a general solution to it. It will therefore normally not involve an inventive step unless the recognition of the problem is non-obvious.

Naturally, if the result as such does not involve an inventive step the means of obtaining the result may still have inventive merit. In that case, however, the claims must be correspondingly limited.

3.8 In the present case the Board takes the view that the "navigation" feature in claim 1 expresses an obviously desirable result since it corresponds to the panning and tilting movements which mechanical systems have always been capable of performing and which are clearly important for any surveillance application. The feature therefore does not involve an inventive step.

3.9 The second drawback with the D1 system mentioned above is that the camera provides only still pictures. Video cameras are however conventionally used for surveillance. Correction and display at real-time video rates were therefore obvious (not to say necessary)

additions to D1. Whether a sufficiently fast method for perspective correction was already known at the priority date need not be considered since claim 1 is not limited to a particular algorithm.

3.10 Thus the subject-matter of claim 1 lacks an inventive step and the main request cannot be allowed.

The auxiliary request

4. Besides additional hardware features already known from D1, claim 1 according to the auxiliary request specifies that the processor produces its output according to a combination of the digitised image signals and the selected viewing angles. The uncorrected image and the viewing angle are however nothing more than the clearly necessary input data for a correction.

Thus this request cannot be accepted either.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Kiehl P. K. J. van den Berg