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D E C I S I O N
of 6 July 2005

Case Number: T 0256/02 - 3.5.1

Application Number: 94116088.9

Publication Number: 0649117

IPC: G06T 11/00

Language of the proceedings: EN

Title of invention:
Method for providing medical images

Applicant:
Allen, George S.

Opponent:
-

Headword:
Medical images/ALLEN

Relevant legal provisions:
EPC Art. 52(4), 54, 56

Keyword:
"Patentability (no)"

Decisions cited:
Referral by the President of the EPO to the Enlarged Board of Appeal pending under Ref. No. G 0001/04

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0256/02 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 6 July 2005

Appellant: Allen, George S.
628 Westview Avenue
Nashville, TN 37205 (US)

Representative: Hoormann, Walter R.
Forrester & Boehmert
Pettenkoferstraße 20 - 22
D-80336 München (DE)

Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 13 August 2001 refusing European application No. 94116088.9 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: S. Steinbrener
Members: W. Chandler
G. Weiss

Summary of Facts and Submissions

I. This appeal is against the decision of the examining division to refuse the application on the grounds that the subject-matter of claims 1 to 14 did not involve an inventive step (Article 56 EPC) based inter alia on:

D1: Proceedings of the SPIE, vol. 902, "Three-Dimensional Imaging and Remote Sensing Imaging", 14 - 15 January 1988, Los Angeles, USA, pages 144-149, ENGELSTAD et al.: "Information extraction from multi-modality medical imaging".

II. The appellant requested that the decision under appeal be set aside and a be patent granted on the basis of claims 1 to 13 filed with the grounds of appeal. The appellant made an auxiliary request for oral proceedings.

III. In response to the communication accompanying the summons to oral proceedings and identifying the issues that needed to be discussed, the appellant stated that he would not be attending the oral proceedings. At the end of the oral proceedings, which took place in the appellant's absence, the Board gave its decision.

IV. Independent claim 1 of the sole request reads as follows:

"A method for determining a physical property of interest associated with discrete spatial locations of a portion of the human anatomy, wherein each spatial location has a unique address, and wherein the portion of the human anatomy is composed of a plurality of

types of matter, each type of matter having at least two properties, comprising the steps of:

- specifying a property of interest, in particular visual appearance or type of tissue;
- selecting a first imaging technique and a second, different imaging technique, in particular from the group comprising a CT scan, a PET scan and a particular type of MRI scan, said imaging techniques being selected as being the most appropriate types of scans for characterizing the property of interest based on a first previously established empirical relationship (53) between the property of interest and the imaging techniques;
- generating a first set of data reflective of at least a first physical property that is different from the property of interest and accessible by the first imaging technique for each spatial location of the area of interest;
- generating a second set of data reflective of at least a second physical property that is different from the property of interest and accessible by the second imaging technique for each spatial location of the area of interest;
- storing the data generated by the first and second imaging techniques in a memory storage device (61, 62, 63, 64, 65, 66) along with the address of each spatial location;
- assigning (75) to each address a value representing the property of interest for each unique address, said value being based on a correlation between the property of interest with the measure of the first physical property obtained in the first imaging scan taken and a

correlation between the property of interest with the measure of the second physical property obtained in the second imaging scan taken, said correlation being based on a second previously established empirical relationship (70) between the property of interest and the physical properties accessible by the imaging techniques."

V. The appellant argued as follows in the written proceedings:

The last feature of claim 1 as amended in appeal proceedings specified that the image technique of the invention performed a correlation based on an empirical relationship. This resulted in the addition of information to that contained in the individual scanned images, so that the obtained values representing the property of interest were closer to reality than in the prior art.

The cluster analysis disclosed in D1 only improved or changed the presentation of information that was already contained in the original image data.

Reasons for the Decision

1. Known medical imaging techniques are only suitable for showing a limited number of properties of the scanned matter, e.g. X-ray for bone and Magnetic Resonance Imaging (MRI) for soft tissue, and usually only as a black and white image. The application (see the introductory portion) essentially concerns a medical imaging method that extracts information from

complementary images from different imaging techniques (multimodality imaging). This information can be used to determine the type of matter, e.g. by colour coding it to give the appearance that it would have when observed during surgery.

2. It is not disputed by the appellant that D1 discloses, in particular at page 144, section 1, a medical imaging method in which two different imaging techniques are selected and used to scan the human anatomy for a property of interest, according to all but the last feature of claim 1. The last feature defines:

"assigning (75) to each address a value representing the property of interest for each unique address, said value being based on a correlation between the property of interest with the measure of the first physical property obtained in the first imaging scan taken and a correlation between the property of interest with the measure of the second physical property obtained in the second imaging scan taken, said correlation being based on a second previously established empirical relationship (70) between the property of interest and the physical properties accessible by the imaging techniques."

3. The Board finds that this feature is not entirely clear and open to various interpretations. However, the Board judges that none of the interpretations that it can see are patentable.

4. As a preliminary point, the Board considers that it is not clear from the new wording whether "said correlation" refers to only the last, or to both of the

correlations mentioned previously in the feature. Assuming the latter, the Board judges that the concept of correlation in the claim is implicit in the concept of the empirical relationship, so that the use of both together is superfluous. The description supports this where, for example, it refers to the empirical relationships described at column 6, lines 7 to 11, as "correlations" later on at lines 30 to 32. Thus, the last feature of the claim essentially defines a step of assigning to each address a value representing the property of interest based on empirical relationships between the property of interest and the first and second physical properties.

5. The examining division stated, at point 10 of the decision under appeal, that carrying out known method steps on a computer did not generally involve an inventive step. However the Board judges that the claimed method does not actually specify that the correlation is carried out on a computer or that the assigned values are stored in memory like the image data from the two scans. Thus the Board judges that the last feature of claim 1 does not exclude the manual activities of the diagnostic imaging specialist described in D1 at page 145, left column, first paragraph. This includes looking at the images from different modalities and performing a "multimodality image correlation". It is clear that this correlation is based on empirical relationships, namely the specialist's knowledge of the relationships between the images and the scanned matter for the different types of image. The Board therefore judges that on the basis of this interpretation the subject-matter of claim 1 is not novel with respect to D1 (Article 54 EPC).

6. Secondly, the Board judges that the claimed empirical relationship is also implicit in the specific embodiment using cluster analysis disclosed in D1. As stated by the Board in its communication and not disputed by the appellant, cluster analysis is a statistical technique that discerns groups of data (clusters) having similar characteristics. The Board judges that it is implicit that the parameters of the clustering algorithm must be varied so that the clusters reflect some useful property of the scanned material and thus according to an empirical relationship. Moreover, the description of the empirical relationship between the types of matter and the scannable properties disclosed in the application at column 6, lines 7 to 13, mentions the use of statistical analysis, and thus does not exclude an interpretation involving a cluster analysis. Hence, if the empirical relationship is interpreted to involve statistical analysis, it is also anticipated by D1 (Article 54 EPC).

7. Finally, even if the claimed previously established empirical relationship were understood to mean a predetermined choice of the clusters not implied by D1, in particular attributing realistic colours to the different types of tissue appearing in the respective imaging methods, the Board judges that this would not involve an inventive step (Article 56 EPC). D1 discloses at page 147, left column, penultimate paragraph, that the clusters can be presented as colour-coded anatomical images. Figure 3 shows such images obtained from the data of three different scans (SPECT, CT and MR). The text under Figure 3A states

that the image shows "abnormal tissue corresponding to that resected uniquely characterized and colored brown". Thus claim 1 would differ at most in that the colours, i.e. the properties of interest, were assigned according to an empirical relationship so as to achieve an image that a surgeon would actually see. This could be considered to solve a problem of better identifying the properties of interest. However, the Board judges that in order to identify properties of interest, it would be obvious to optimise the algorithm to produce clusters so that matter with similar properties would have the same colour. For a realistic image useful in surgery, this would involve comparing the colours obtained with the actual properties of the matter and, hence, a specific empirical relationship.

8. The appellant argues that the wording of the last feature of claim 1 implies the addition of empirical information concerning the meaning of the data, which D1 does not disclose. However, it is apparent from the various cases treated above that the Board judges that it is implicit or at least obvious that this is done. Furthermore, D1 explicitly describes, at page 145, left column, line 23, the result of the techniques as extracting "added information".

9. Since the Board finds no interpretation of claim 1 patentable under Articles 54 or 56 EPC, there is no need to consider whether the claimed method relates to treatment of the human body by a diagnostic method, excluded from patentability under Article 52(4) EPC. Hence, in deciding the present case, the Board does not see a need for the answer to the relevant question

referred to the Enlarged Board of Appeal by the President of the EPO (pending under Ref. No. G 1/04).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Sauter S. Steinbrener