Intellectual Property Office

BL O/035/17

31 January 2017

PATENTS ACT 1977

APPLICANT	The Regents of the University of California
ISSUE	Whether patent application GB 1300053.5 complies with section 1(1)(b)
HEARING OFFICER	Mr. Peter Mason

DECISION

Introduction

1 The international application was filed on 8 July 2011, claiming priority from US provisional application number 61/363,115. The international application was published as WO 2012/006549 A2 and republished, after entering the national phase, as GB 2494356 A.

2 At examination stage, the examiner objected that the claimed invention was not new in light of three documents found during the top-up search. The subsequent rounds of amendment dealt largely with issues of added matter. When these had been resolved, the examiner objected that the amended claims lacked an inventive step in the light of two of the previously cited documents.

3 Before the hearing, amendments to the claims were submitted along with the skeleton arguments on 24 October 2016. This decision is based on these claims.

4 At the hearing, the applicant was represented by Simon Davies of D Young & Co. Also present were the examiner, Manolis Rovilos, the hearing officer's assistant, Mark Simms, and observers, Virgil Scott and Toby Willis of D Young & Co.

The invention

5 The invention claimed in GB1300053.4 is a system for monitoring patient activity. It comprises one or more measurement devices, which measure the patient's activity and a server which communicates with the devices. The patient's activity state is classified and an interface created. There are several features of the server listed in the claims. These include de-identification of the data received from the measurement devices, storing the data in a personalised database, a classifier which identifies particular activities of the patient, updating the sampling frequencies of the

devices based on the activity identified and the use of specialised user interfaces for different user communities.

The Claims

6 There are three independent claims, which read as follows:

Claim 1. A system for monitoring patient activity comprising:

at least one measurement device configured to generate and to provide data related to a patient's physical activity; and

a server configured to receive a communication of the data from the at least one measurement device and to perform data de-identification, the server comprising a personalized database configured to store the data, and a classifier configured to make an interface in real-time regarding a state of the physical activity from values of the data comprising at least one of time domain values and frequency domain values, the frequency domain values including a fundamental frequency component and spectrum energy, wherein the server is operable to reconfigure the classifier;

wherein the server is further configured to provide feedback regarding the classified state, including updating a sampling frequency with which the at least one measurement device generates the data via automatically repeated data samples, and wherein the server supports specialized interfaces for different user communities to access data, including tools for rendering results in an understandable form for the different user communities.

23. A method of monitoring patient activity, the method comprising:

a server receiving a communication of data related to a patients physical activity, wherein the data is based on one more samples from at least one measurement device, the server comprising a personalized database configured to store the data;

performing by the server data de-identification;

making an interface in real time with a classifier of the server regarding a state of the physical activity from values of the data comprising at least one of time domain values and frequency domain values, the frequency domain values including a fundamental frequency component and spectrum energy, wherein the server is operable to reconfigure the classifier; and

providing feedback regarding the classified state, including updating a sampling frequency with which the at least one measurement device generates the data via automatically repeated data samples, and supporting specialized interfaces for different user communities to access data, including tools for rendering results in an understandable form for the different user communities.

Claim *43. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method of monitoring patient activity, the method comprising:*

Inputting data related to a patient's physical activity, wherein the data were captured via one or more samples taken by at least one measurement device coupled to the patient;

Performing by a server data de-identification;

Making an inference with a classifier in real time regarding a state of a patient's physical activity from values of the data comprising at least one of time domain values and frequency domain values, the frequency domain values including a fundamental frequency component and spectrum energy, wherein the server is operable to reconfigure the classifier; and providing feedback regarding the classified state, including updating a sampling frequency with which the at least one measurement device generates the data via automatically repeated data samples, and supporting specialized interfaces for different user communities to access data, including tools for rendering results in an understandable form for the different user communities.

The law

7 Section 1(1) deals with the conditions that must be met for a patent to be granted. It states that:

> *A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say -*
>
> *(a) the invention is new;*
>
> *(b) it involves an inventive step;*
>
> *(c) it is capable of industrial application;*
>
> *(d) the grant of a patent for it is not excluded by subsections (2) and (3) or section 4A below;*

8 Section 3 then sets out how the presence of an inventive step is determined:

> *An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above (and disregarding section 2(3) above).*

9 Matter which "forms part of the state of the art by virtue only of section 2(2)" is all matter which was made available to the public before the priority date of the application in question. In this case this means all matter published before 9 July 2010.

10 The task for me is therefore to determine whether claimed invention does or does not involve an inventive step, or in other words to determine if it is obvious having regard to any matter made public before 9 July 2010. The approach to determining obviousness has been considered at length by the Courts most notably by the Court of Appeal in the cases generally referred to as *Windsurfing*[1] and *Pozzoli*[2] .

11 What the Courts provided in those cases was the idea of using a structured approach to the problem of deciding whether an invention involved an inventive step. That structured approach involves the following steps:

> *(1) (a) Identify the notional "person skilled in the art"*
>
> *(b) Identify the relevant common general knowledge of that person;*
>
> *(2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;*
>
> *(3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;*
>
> *(4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to he person skilled in the art or do they require any degree of invention?*

Arguments and analysis

12 There was common ground between the applicant and the examiner on the first three steps of the *Windsurfing/Pozolli* approach to determining that the claimed invention involves an inventive step.

13 The examiner had cited two documents in support of his argument:

> JP 2009-039466 A (ATR ADVANCED TELECOMM RES INST)
>
> US 2006/0282021 A1 (DEVAULT ET AL.)

14 The examiner identified three differences between the claimed invention and the cited prior art documents. It is necessary for all three of these to be obvious, for the application to lack an inventive step. If any one of these differences is inventive, then the claimed invention is also inventive.

15 The first difference between the claimed invention and the prior art is that the claimed invention performs data de-identification. That is the data is stored in the database in a manner in which the identity of the patient has been obscured. Mr

[1] Windsurfing International Inc. v Tabur Marine (Great Britain) Ltd, [1985] RPC 59
[2] Pozzoli SPA v BDMO SA [2007] EWCA Civ 588

Davies did not address the inventiveness or obviousness of this feature at the hearing.

16 The second difference between the claimed invention and the prior art is the modification of the sampling frequency based on the classified activity.

17 The prior art document JP 2009-039466 A discloses a system for identifying activities of people based on acceleration sensors connected to their bodies. The sensors communicate with a server, which analyses the data and identifies different activities. The document contains an analysis of the effect of frequency of sampling on the accuracy of activity identification. This was carried out by down sampling the data collected at 50 Hz to simulate data collected at lower frequencies. It notes that the sampling frequency required to identify an activity accurately varies from activity to activity. In particular, it states that a frequency of at least 6.25 Hz is required to accurately identify all the activity types. It also notes that lowering sampling frequency will extend the battery life of the acceleration sensors. It then concludes that in the given example, the sampling frequency is fixed at 50 Hz, as power-saving is not the main objective of the system. This interpretation of the document was based on machine translations and was agreed as common ground by Mr Davies and the examiner.

18 Mr Davies argued that this suggests that the sampling frequency should be fixed at a frequency that is greater than the lowest frequency, which can reliably detect all the activities and that this teaches away from the concept of varying the sampling frequency based on the detected activity. He further argued that, although the mention of lower frequencies extending battery life might suggest sampling at the lowest frequency that can reliably detect all activities, there is no ability to vary the frequency disclosed in this document. As such, there can be no suggestion of a method of how to vary the frequency. Therefore, it cannot be obvious to vary the sampling frequency based on the activity.

19 I accept this argument and have to conclude that this feature is not obvious in the light of this document.

20 The prior art document US 2006/0282021 A1 discloses a system for fall detection and motion analysis. The system comprises a wearable monitoring device and a console. The device transmits data and alerts to the console. However, the classification of activities is carried out by local on-body computing resources, without depending on external computation servers. In addition, it does not discuss the relationship between sampling frequency and activity detection. Mr Davies argued that this document does not disclose anything more that is relevant to the current application in general and does not disclose anything more that is relevant to this feature in particular.

21 In the absence of any other indication of the relevance of this document, I accept this argument.

22 In addition, the examiner had also asserted that the relationship between the optimum sampling frequency and the monitored activity is well known in the art. He also stated that modifying the sampling frequency based on the activity is routinely

done. Mr Davies argued that, in the absence of any supporting evidence that this assertion is incorrect.

23 Again, I agree with Mr Davies' argument and have to conclude that it would not be obvious to add this feature to the systems disclosed in the prior art based on common general knowledge.

24 As such, I have to conclude that modifying the sampling frequency of the measurement devices based on the classification of the activity is not obvious and that the claimed invention involves an inventive step.

25 The third difference between the claimed invention and the prior art is the specialised interfaces for different user communities. However, having already decided that the claimed invention involves and inventive step, I do not need to consider this difference.

26 Mr Davies also gave additional arguments about the patentability of dependent claim 18. However, having concluded that the independent claims are inventive, I do not need to consider these arguments

Conclusion

27 I conclude that the invention defined in the claims submitted with the skeleton argument (dated 24 October 2016) does involve an inventive step.

28 It will be necessary to formally file the claims (as filed with the skeleton arguments dated 24 October 2016) and to bring the description in line with the claims as settled.

29 I remit the application back to the examiner for further processing towards grant.

30 As indicated during the hearing a discretionary extension to the s20 date would be allowed by filing the relevant patents form 52

Appeal

31 Any appeal must be lodged within 28 days after the date of this decision.

Peter Mason

Deputy Director, acting for the Comptroller