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Datasheet for the decision of 28 February 2013

Case Number: T 1281/10 - 3.5.01

Application Number: 06100075.8

Publication Number: 1684228

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Language of the proceedings: EN

Title of invention:
Scoring with Bayesian algorithm

Applicant:
Microsoft Corporation

Headword:
BAYESIAN SCORING/Microsoft

Relevant legal provisions:
EPC 1973 Art. 56

Keyword:
Inventive step - mixture of technical and non-technical features

Decisions cited:
T 0619/02, T 0717/05, T 0528/07, T 1924/07, T 0042/10

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Case Number: T 1281/10 - 3.5.01

D E C I S I O N
of Technical Board of Appeal 3.5.01
of 28 February 2013

Appellant: (Applicant)	Microsoft Corporation One Microsoft Way Redmond, WA 98052 (US)
Representative:	Free, Rachel Alder Olswang LLP 90 High Holborn London WC1V 6XX (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 20 January 2010 refusing European patent application No. 06100075.8 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: S. Wibergh
Members: P. Scriven
P. Schmitz

Summary of Facts and Submissions

I. The appeal is against the Examining Division's decision to refuse European patent application 06100075.8. They found that there was a lack of inventive step, because the invention amounted to an obvious technical implementation of a non-technical method.

II. In the statement setting out its grounds of appeal, the appellant requested that a search be carried out, and that a patent be granted on the basis of a main, first, or second auxiliary request, all filed with the statement of grounds. The appellant also requested that oral proceedings be held, if none of the requests was accepted as being patentable on the basis of its written statements.

III. The Board arranged for oral proceedings to be held, during which this case and the related case T 42/10 would be considered. The Board presented its provisional opinion in an annex to the summons.

IV. Oral proceedings were held as scheduled. The appellant's final requests were identical to those set out above.

V. Claim 1 according to the main request reads as follows.

> *A method at an on-line gaming system where a plurality of players of game are in communication with a central server providing an electronic online gaming environment through a global communications network the method comprising:*
>
> *for each player, storing at a memory a mean and a variance of a probability distribution*

representing an indication of the skill of the player at the game;

receiving outcomes of games from the online gaming environment through the global communications network;

using a computer-implemented Bayesian online learning system, arranged to represent an indication of player skill as a probability distribution, to update and replace in memory the means and variances associated with those players participating in games having received outcomes;

using a player match module to predict the outcomes of future games using the stored indications of the skills of the players; and to match players for future games using the predicted outcomes; and

giving one or more players matched by the player match module the opportunity to accept or deny a match based on the predicted game outcome given to the one or more players over the global communications network.

VI. Claim 1 according to the first auxiliary request reads as follows.

A scoring system (200) implemented in a computer environment for updating a first score (212) including a first mean and a first variance representing a distribution associated with at least one player of a first team, the updating being based on an outcome

of a game between at least the first team opposing a second team, the first team including at least one player and the second team including at least one other player, wherein the outcome of the game is selected from a set of possible game outcomes including the first team winning, the first team losing, and the first and second teams drawing and wherein a second score including a second mean and a second variance represents a distribution associated with the at least one other player of the second team, the system comprising:

a score update module (202) adapted to:

receive the outcome of the game, wherein the outcome is communicated to a central processor through a global communication network;

receive a first dynamic score (214);

update the first dynamic score to a first updated score (216) based on the outcome of the game; and

store the first updated score in a data store; and

a dynamic score module (204) adapted to:

receive, from the data store, the first score;

receive, from the data store, the second score; and

modify the first score to the first dynamic score by updating the first variance to a first modified variance based on a dynamic score function of a period of time since the first team last played the game;

wherein the first dynamic score is updated to the first updated score by updating the first mean and the first modified variance based on the outcome of the game and wherein the first dynamic score is received from the dynamic score module;

a player match module adapted to predict the outcomes of future games using the scores and to match players for future games using the predicted outcomes;

the scoring system being adapted to give one or more players matched by the player match module the opportunity to accept or deny a match based on the predicted game outcome.

VII. Claim 1 according to the second auxiliary request reads identically to claim 1 according to the first auxiliary request, except that the final two paragraphs are omitted.

VIII. The appellant's arguments, as far as they are relevant to this decision, can be summarised as follows.

The invention addressed and solved the technical problem of controlling an online gaming system so as to keep

players interested. It did that by tracking their performance and finding suitable opponents. According to T 717/05, *Auxiliary game/LABTRONIX CONCEPT INC.*, not published in the OJ EPO, using technical means to keep a player's interest was technical.

Moreover, methods of measuring were patentable and were a special subcategory of methods mentioned in T 619/02, *Odour selection/QUEST INTERNATIONAL*, OJ EPO 2007, 63, at 2.4.1.

In the present case, there was no psychological assessment, but simply observations of game outcomes and the mathematics involved were not abstract but applied to a real-world situation, which might depend, for example, on reaction times or hand - eye coordination. As a result, the arguments against technicality did not apply. In the present case, the measurement of skill was technical, irrespective of the implementation on a computer.

The fact that players can choose whether or not to play against opponents selected for them also increases enjoyment by producing more challenging games.

The invention also resulted in less traffic on the network, because the quality of the proposals means there will be fewer rejections which have to be transmitted, and also because players simply use less traffic looking for a match.

In 2005, online learning was not "notorious." It was not straightforward for the skilled person to implement Bayesian learning, which was a rather new field at that time. It would not have been enough for the skilled person simply to be presented with the equations set out

in the application. She would have had to understand their meanings, if the method was going to work. Thus, the invention was not obvious even from the point of view of a skilled person presented with the task of implementing the mathematical method of modelling skill.

Reasons for the Decision

1. *Background*

1.1 The invention is concerned with online games, and the assessment of how players perform in them. The basic idea is to represent performance not simply as a score, but as a probability distribution. In practice, Gaussian distributions are used, represented by their means and variances. Intuitively, a player with a high mean tends to perform well; a player with high variance will have a wide spread of results about the mean, while a player with low variance consistently gets results close to the mean.

1.2 As games are played, results are collected and the distributions that represent the players' performances are updated. That involves a Bayesian approach, which, in the case of Gaussian distributions represented by their means and variances, amounts to a pair of update equations. These produce new values for the mean and variance of a player's distribution from the old values, together with the outcome of the game and the distribution of the opponent.

1.3 The system uses the assessments to find suitable opponents, so that players can play games that are neither too easy nor too hard. The idea is that such

games are more enjoyable, so that players will be encouraged to continue to use the system.

1.4 As part of an online gaming system, all this is automated. Performance assessments are automatically updated, as games are played and results collected. Players then see potential opponents selected by the system, and can choose whether or not to play.

2. *Main request, claim 1, inventive step*

2.1 Claim 1 according to the main request defines a method that, based on outcomes of (online) games and stored indications of the skills of the players, predicts the outcomes of future games, and matches players for them. It must first be determined in how far the features of the claim have technical character and so could contribute to inventive step.

2.2 The appellant, relying on paragraph 2.4.1 of T 619/02, argues that the method of assessing player performance is technical by virtue of being a method of measuring.

2.3 The Board first notes that T 619/02 does not say that all methods of measuring are technical. It must therefore be assessed whether, in the present case, the measurement can be accepted as technical.

2.4 The term "measurement" is rather broad. It encompasses finding the spectrum of the hydrogen atom, or the salinity of sea water; but also whether one political party is more or less popular than another. In T 619/02, the measurement was of reactions to odours, and it was found to be non-technical. The appellant seeks to distinguish the present case, arguing that the reasons for rejecting the method in T 619/02 do not

apply. In particular, the appellant argues that there are no psychological assessments involved.

2.5 In the Board's view, the lack of psychological assessments cannot, alone, be determinative. What is needed is a technical problem and a technical solution to it, i.e. a technical effect. However, judging the skill of a game player and predicting the outcomes of games does not seem even to involve a physical change of any kind, still less a technical effect.

In this context, the appellant argues that the measurement of player performance might involve the measurement of hand-eye coordination or of reaction times. However,the claimed method does not measure reaction times or use it to deduce information on performance. Nor does it take the information on performance and deduce anything about reaction times. The reaction time is never known. The same goes for hand-eye coordination. In fact, the claimed method is in no way limited to games in which reaction times or hand-eye coordination are important. It applies to chess as much as to football, and to poker as much as to pinball.

2.6 The Board, therefore, sees clear reasons for considering the measurement of performance in games as non-technical.

2.7 The appellant's second argument is based on paragraph 5.9 of T 717/05, in which it is stated that "amusement is the psychological purpose of a gaming apparatus and is the relevant objective technical problem to the extent that the enhanced amusement is achieved by technical features of the claim".

2.8 In T 717/05, the deciding board did indeed hold that the step of monitoring the outcomes of games was a technical feature, but only in combination with the step of displaying them (paragraph 5.6 with paragraph 4.5). The displaying step was necessary, since it permitted the player to be informed about the development of the game, thus addressing the problem of maintaining interest (paragraph 5.1). The present claim, however, does not require the players' scores to be displayed, but only to be stored. For this reason alone, T 717/05 does not appear to be relevant. A more basic reason is that the Board has strong doubts that amusement, even if achieved by technical (in particular computing and displaying) means, really is a technical problem. If it were, any dull computer game could be regarded as posing a technical problem that could be solved by any less dull game. The difficulties involved in such a view are evident (the skilled person need not be skilled in a technical art; the effect would be subjective), and the decision has been largely ignored in the jurisprudence of the Boards of Appeal. T 528/07, *Portal system/ACCENTURE*, not published in the OJ EPO, expressly declined to follow the approach taken in T 717/05.

2.9 The Board's view regarding technicality can be summarized as follows.

2.9.1 The overall aim of keeping players interested is not technical.

2.9.2 The intermediary aim of assessing and comparing playing performance is not technical.

2.9.3 The representation of performance by the means and variances of a probability distributions, the updating

of the values, and the prediction of future outcomes are mathematical methods. The Board stated that in the annex to the summons to oral proceedings, and the appellant has not argued against it.

2.10 In the light of the conclusions about technicality, it is legitimate to consider the invention as an automation of a non-technical method, and to ask whether the technical implementation would, or would not, have been obvious to the skilled person before the priority date.

2.11 The skilled person would have faced the task of providing technical means for carrying out the following:

- storing a mean and a variance of a probability distribution representing an indication of the skill of the player at the game;
- receiving outcomes of games;
- using Bayesian learning to update the means and variances associated with those players participating in games having received outcomes;
- predicting the outcomes of future games using the stored indications of the skills of the players;
- matching players for future games using the predicted outcomes; and
- giving one or more players matched by the player match module the opportunity to accept or deny a match.

2.12 When doing that, the skilled person would have been obliged, by the nature of the method, to provide a means of storing, some means allowing the receipt of game outcomes, some means of implementing a Bayesian learning system, and some means of predicting, matching

and giving an opportunity of accepting or rejecting a match.

2.13 Any means of storing means and variances can reasonably be called a memory. Similarly, means of prediction, matching, and allowing acceptance or rejection, can reasonably be called a "player match module". Those technical features are inherent in any technical implementation.

2.14 The question of inventive step, therefore, comes down to whether it would have been obvious to implement the Bayesian learning on a computer, to use a global communications network to allow game outcomes to be received, and provide a central server to provide an "online gaming environment".

2.15 It is not disputed that computers, the Internet, and servers were all well known at the priority date (24 January 2005). The skilled person would have been aware that computers would be able to carry out the mathematical operations needed by the Bayesian learning algorithm, and that the Internet could be used as a means of passing messages such as the outcomes of games. It would, then, have been obvious to use those means. Once that is done, the presence of a central server is inevitable, and the resulting system is an "online gaming environment."

2.16 The Board, therefore, concludes that the method defined in claim 1 does not involve an inventive step. Since the technical means were notorious, the negative conclusion regarding inventive step can be reached without an additional search (T 1924/07 FA Information/ BRIDGESTONE CORP., not published in OJ EPO).

2.17 The appellant's argument that online Bayesian learning was not (well) known at the priority date does not affect the conclusion, even if correct. That is because the Bayesian learning is already part of the non-technical method the skilled person is required to automate.

2.18 The appellant's other argument, that there is a reduction in network traffic also fails to affect the Board's conclusion. Firstly, there is no evidence of a reduction. Secondly, if there is an effect on network traffic, it is an effect that is obtained in any technical implementation that uses a communication network at all, rather than one that belongs to some particular (claimed) such implementation but not to others.

3. *First auxiliary request, claim 1, inventive step*

3.1 The claim defines a "scoring system" rather than a method. Nevertheless, the same considerations as for the main request apply. The skilled person, in implementing the non-technical method on computers connected to the Internet would produce the system defined in claim 1.

3.2 The Board, therefore, concludes that the system defined in claim 1 does not involve an inventive step.

4. *Second auxiliary request, claim 1, inventive step*

4.1 This claim defines a subset of the features of claim 1 according to the first auxiliary request, and so the conclusion as to inventive step must be the same.

5. In conclusion, none of the main request, and first and second auxiliary requests can be allowed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

T. Buschek S. Wibergh

Decision electronically authenticated