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Datasheet for the decision
of 2 August 2021

Case Number: T 3033/18 - 3.2.04

Application Number: 12745158.1

Publication Number: 2674204

IPC: A63F13/00, G06F3/01

Language of the proceedings: EN

Title of invention:
METHOD FOR CONTROLLING MAN-MACHINE INTERACTION AND APPLICATION
THEREOF

Applicant:
Huang, Defeng

Headword:

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (no)

Decisions cited:
T 0336/07, T 0258/03, T 1543/06, T 0641/00, T 0012/08

Catchword:

Case Number: T 3033/18 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 2 August 2021

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Representative:

Decision under appeal: Decision of the Examining Division of the
                               European Patent Office posted on 8 August 2018
                               refusing European patent application No.
                               12745158.1 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman   J. Wright
Members: S. Hillebrand
                  C. Heath

Summary of Facts and Submissions

I.   The appeal was filed by the appellant (applicant)
        against the decision of the examining division to
        refuse the patent application in suit.

II.   Summons to oral proceedings were issued on
        13 October 2020. With a letter received
        7 December 2020, the then representative of the
        appellant relinquished their brief. In a communication
        of 11 March 2021 the appellant-applicant was invited to
        appoint a professional representative and reminded of
        the scheduled oral proceedings.

III.   Oral proceeding before the Board were held on 2 August
        2021 in the absence of the duly summoned appellant-
        applicant in accordance with Rule 115(2) EPC and
        Article 15(3) RPBA 2020. At the end of the oral
        proceedings the Chairman announced the decision.

IV.   The appellant-applicant requested that the decision
        under appeal be set aside and that a patent be granted
        on the basis of the main request or, in the
        alternative, on the basis of auxiliary requests 1 or 2,
        all filed with the grounds of appeal.

V.   The independent claims relevant to this decision read
        as follows:

        Main request, claim 1: "A man-machine interaction
        controlling method, wherein kinetic parts of the user
        are associated with the virtual action parts of the
        self-role, such that the kinetic part of the user and
        the associated virtual action part of the self-role are
        the same, the method comprises steps of:

1) creating the self-role in the virtual environment,
wherein the self-role has more than one virtual action
part;
2) associating kinetic parts of the user with the
virtual action parts of the self-role, wherein the user
is lying or sitting at the operating position;
3) setting enlarging proportion of an action range of
different virtual action parts relative to action range
of the kinetic parts of the user;
4) performing the actions by the user while sitting or
lying at the operating position, and obtaining actions
performed by the user while the user sits or lies at
the operating position; and
5) enlarging the obtained actions according to the
enlarging proportion so as to achieve virtual action of
the self-role, and enabling the virtual action parts of
the self-role to perform the virtual action according
to the actions by the kinetic parts of the user,
wherein while the self-role is not sitting nor lying
during the virtual action in the virtual environment,
movement morphology of the self-role is different and
not similar with movement morphology of the user, and
wherein the user's part supported by the operation
position is different from the self-role's part
supported by the virtual environment, and further the
user remains at the operating position while performing
the actions required for controlling the virtual action
of the self-role".

Main request, claim 16:

"A man-machine interaction controlling system,
characterized in that the system comprises an imaging
device, an operation platform, a recognizing and
capturing device, and a synchronization controlling

system for controlling the synchronization of the
actions of the user and self-role;
the operation platform includes an operation position
and an obstacle system, the obstacle system provides a
limitation mechanism to limit the movement range of the
user's limbs to make the limited parts perform the
permitted action at a maximum range M and ensure the
user continuously perform any action;
the recognizing and capturing device is capable of
recognizing and capturing the user action;
wherein:
1) kinetic parts of the user are associated with the
virtual action parts of the self-role, such that the
kinetic part of the user and the associated virtual
action part of the self-role are the same; an action
range of the virtual action part of the self-role has a
plurality of enlarging proportions at different times
with respect to an action range of the associated
kinetic part of the user, wherein while the self-role
is not sitting nor lying during the virtual action in
the virtual environment, movement morphology of the
self-role is different and not similar with movement
morphology of the user, and wherein the user's part
supported by the operation position is different from
the self-role's part supported by the virtual
environment, and further the user remains at the
operating position while performing the actions
required for controlling the virtual action of the
self-role;
2) a maximum range and threshold value M is set for
each of the user permitted actions which are performed
by of the user or a prop, a maximum range and upper
limit value N is set for the virtual actions which are
performed by the self-role, supposing the action range
of the micro-action permitted by the user in time t is
Mt, the action range of the virtual permission action

performed by the self-role is Nt, then if Mt≥ M, Nt=N;
if Mt<M, N>Nt>Mt".

First auxiliary request, claim 1: "A man-machine
interaction controlling method, wherein kinetic parts
of the user are associated with the virtual action
parts of the self-role, such that the kinetic part of
the user and the associated virtual action part of the
self-role are the same, the method comprises steps of:
1) creating the self-role in the virtual environment,
wherein the self-role has more than one virtual action
part;
2) associating kinetic parts of the user with the
virtual action parts of the self-role, wherein the user
is lying or sitting at the operating position;
3) setting different enlarging proportion of an action
range of different virtual action parts relative to
action range of the kinetic parts of the user;
4) performing the micro-actions by the user while
sitting or lying at the operating position, and
obtaining micro-actions performed by the user while the
user sits or lies at the operating position; and
5) enlarging the obtained micro-actions according to
the enlarging proportion so as to achieve virtual
action of the self-role, and enabling the virtual
action parts of the self-role to perform the virtual
action according to the micro-actions by the kinetic
parts of the user,
wherein while the self-role is not sitting nor lying
during the virtual action in the virtual environment,
movement morphology of the self-role is different and
not similar with movement morphology of the user, and
wherein the user's part supported by the operation
position is different from the self-role's part
supported by the virtual environment,and further the
user remains at the operating position while performing

the micro-actions required for controlling the virtual
action of the self-role".

Second auxiliary request, claim 1: "A man-machine
interaction controlling method, wherein kinetic parts
of the user are associated with the virtual action
parts of the self-role, such that the kinetic part of
the user and the associated virtual action part of the
self-role are the same, characterized in that an action
range of the virtual action part of the self-role has a
plurality of enlarging proportions at different times
with respect to an action range of the associated
kinetic part of the user, the method comprises steps
of:
1) creating the self-role in the virtual environment,
wherein the self-role has more than one virtual action
part;
2) associating kinetic parts of the user with the
virtual action parts of the self-role, wherein the user
is lying or sitting at the operating position;
3)setting different enlarging proportion of an action
range of different virtual action parts relative to
action range of the kinetic parts of the user;
4) performing the micro-actions by the user while
sitting or lying at the operating position, and
obtaining micro-actions performed by the user while the
user sits or lies at the operating position; and
5) enlarging the obtained micro-actions according to
the enlarging proportion so as to achieve virtual
action of the self-role, and enabling the virtual
action parts of the self-role to perform the virtual
action according to the micro-actions by the kinetic
parts of the user,
wherein while the self-role is not sitting nor lying
during the virtual action in the virtual environment,
movement morphology of the self-role is different and

not similar with movement morphology of the user, and
wherein the user's part supported by the operation
position is different from the self-role's part
supported by the virtual environment, and further the
user remains at the operating position while performing
the micro-actions required for controlling the virtual
action of the self-role".

VI.   In the present decision, reference is made to the
        following document: D1 US 20110007079 Al.

VII.   The appellant's arguments relevant for this decision
        (see grounds of appeal, pages 8 and 9) can be
        summarised as follows:

        The subject-matter of claim 1 involves an inventive
        step. Document D1 is the closest prior art.

        D1 at least fails to specifically disclose or teach the
        following features (e.g., in the second auxiliary
        Request):

        1) wherein while the self-role is not sitting nor lying
        during the virtual action in the virtual environment,
        movement morphology of the self-role is different and
        not similar with movement morphology of the user, and
        wherein the user's part supported by the operation
        position is different from the self-role's part
        supported by the virtual environment, and further the
        user remains at the operating position while performing
        the micro-actions required for controlling the virtual
        action of the self-role and

        2) an action range of the virtual action part of the
        self-role has a plurality of enlarging proportions at
        different times with respect to an action range of the

associated kinetic part of the user (i.e., the same user part).

The advantageous effect of the distinguishing feature 1 is that, since the user's part supported in the operation position is different from the self-role's part supported in the virtual environment, the invention does not require the direct mapping of the actions of the user to the actions of the self-role. Furthermore, the self-role is not bound by the virtual environment as the user is by their physical environment (see paragraph [0063] of the application, "the user can control the self-role perform a back bend action as shown in FIG. 3 while performing a punch action.").

The distinguishing feature 2 has the advantageous effect that it presents more freedom for the user part when controlling the virtual self-role part.

Starting from D1 the claimed invention is not obvious. D1 fails to hint or suggest the distinguishing features 1 and 2. In other words, the cited prior art can not achieve the above effect.

D1 discloses only the detection of a user with a camera, and the generation of a skeletal representation of the user based on the detected image and the mapping of the users subsequent movements to that skeletal representation (see paragraphs [0039]-[00431). Specifically D1 refers to direct mapping of the actions of the user to the actions of the self-role. Thus, the actions of the user and the actions of the self-role must be the same.

In contrast with the prior art, in the present invention, the self-role is able to perform virtual actions while neither sitting nor lying in the virtual environment, whilst the user is always in a sitting or lying position. In this regard, the solution and corresponding effect of the present application substantially differ from those of D1. The person skilled in the art receives no suggestion from the cited document on the claimed functionality.

Due to the above difference, it cannot be said that the skilled person not only could, but also would have modified the solution of D1 to arrive at the claimed invention. Consequently the cited document D1 cannot render obvious the subject-matter claimed.

Therefore, claim 1 involves an inventive step in the sense of Article 56 EPC. Accordingly, at least the second auxiliary request is allowable.

Reasons for the Decision

1.   The appeal is admissible.

2.   Right to be heard

2.1   In accordance with established jurisprudence (see Case Law of the Boards of Appeal, 9th edition, 2019 (CLBA), V.A.4.5.3, the board is not obliged to delay any step in the proceedings, including its decision, by reason only of the absence at the oral proceedings of any party duly summoned; that party may then be treated as relying only on its written case. The board must also ensure that each case is ready for decision at the

conclusion of the oral proceedings. Furthermore, the explanatory notes to Art. 15(3) RPBA 2007, which is unchanged in its RPBA 2020 version, state that this provision does not contradict the principle of the right to be heard pursuant to Art. 113(1) EPC since that Article only affords the opportunity to be heard and, by absenting itself from the oral proceedings, a party gives up that opportunity (see the explanatory note to Art. 15(3) RPBA 2007 in CA/133/02 dated 12 November 2002).

2.2   In the present case, a summons to attend oral proceedings was issued to the appellant-applicant's then representative. Therefore, the appellant-applicant was duly summoned. In a communication sent directly to the appellant when he was no longer represented, the Board alerted him to the need to appoint a professional representative and, as a courtesy, reminded him of the upcoming oral proceedings. Therefore, the appellant was well aware that he had the opportunity to be heard. However, by failing to have appointed a representative in accordance with Article 133(2) EPC at the time of the oral proceedings, and by not having such a representative attend the oral proceedings, the appellant relinquished this opportunity.

Therefore, in conformity with the jurisprudence outlined above, the Board is satisfied that the appellant relies on his written case and that deciding the case at the oral proceedings in his absence does not contradict the principle of the right to be heard pursuant to Art. 113(1) EPC.

3.   Main request, subject matter of claim 1

3.1   The present invention relates to the control of an
        avatar (self-role in the words of the claim) having
        virtual action parts (limbs) in a virtual environment.
        In the Board's view it therefore relates to a way of
        playing a game, which is governed by a set of game
        rules.

3.2   The Board considers (see **T0336/07**, reasons 3.3.1) game
        rules to form part of "[…] a regulatory framework
        agreed between players and concerning conduct,
        conventions and conditions that are meaningful only in
        a gaming context. It is normally so perceived by the
        players involved, and as serving the explicit purpose
        of playing a game. As such an agreed framework it is a
        purely abstract, mental construct, though the means for
        carrying out the game play in accordance with such a
        set may well be technical in nature". Moreover, (see
        T0012/08, reasons 4.6) game rules "form the abstract
        formal structure of a game describing the interplay
        between player actions and the choices offered within
        the game."

3.3   A set of game rules thus determines inter alia how
        game-play evolves from beginning to end in response to
        player actions and decisions and the goals to be
        achieved to conclude game-play.

        For example, in the method of claim 1, the step 1 of
        creating a self-role in a virtual environment will be
        governed by the rules of the game.

        Subject matter related to schemes, rules or methods for
        playing games, such as characters, a virtual game space
        environment and game images, as such, is excluded from
        patentability under Articles 52(2)(c) and 52(3) EPC.

3.4   However, claim 1 also has technical aspects, for
        example, in step 4, obtaining user actions in the
        physical world for controlling an avatar implies
        technical means for detecting the user's actions (cf.
        published patent application, paragraphs [0047] to
        [0049] - wearable devices may sense positions and
        gestures of a user).

        Therefore the subject matter of claim 1 has overall
        technical character (following **T0258/03** OJ EPO 2004,
        575), even if it is "mixed" (with both technical and
        non-technical aspects).

3.5   In dealing with such "mixed" inventions, the Board
        adopts the approach as set out in **T1543/06**
        (Gameaccount), reasons 2.1-2.9, which is based foremost
        on **T0641/00** (OJ EPO 2003, 352). Thus, only those
        features that contribute to technical character are to
        be taken into account when assessing inventive step.

3.6   That requirement cannot rely on excluded (non-
        technical) subject matter alone however original it may
        be. The mere technical implementation of something
        excluded cannot therefore form the basis for inventive
        step. A consideration of the particular manner of
        implementation must focus on any further technical
        advantages or effects associated with the specific
        features of implementation over and above the effects
        and advantages inherent in the excluded subject-matter.

3.7   In the present case it is necessary to consider what
        claimed aspects are non-technical, how they have been
        technically implemented, and whether such
        implementation is inventive over the prior art.

4.   Claim 1, main request, inventive step

The Board agrees with the appellant-applicant that D1
is a good starting point for assessing inventive step.

4.1   D1 discloses (see abstract and figure 1) how a user 18
        can control an avatar (self-role) in the game world.
        Thus it is a man-machine interaction controlling
        method. The user 18's limbs (kinetic parts in the words
        of the claim) are associated with the virtual action
        parts of the self-role, such that the kinetic part of
        the user and the associated virtual action part of the
        self-role are the same (see for example and paragraphs
        [0049], [0052], [100], [0026] and [112] figures 1, 6A
        and 6B - the user's actions are mapped onto the avatar
        to control the latter in the game).

4.2   D1 also discloses the following steps:

        1) users (see for example paragraph [0114]) model their
        own avatars or select one from a library (see figure
        2). Thus they create the self-role in the virtual
        environment. The self-role has moving arms, legs and
        hands (see for example paragraph [0049] and [0052] and
        the goal keeper avatar in figure 6A or the boxer in
        figures 7A and 7B). Therefore the self-role has more
        than one virtual action part.
        2) The user's limbs (see paragraph [0112] and [0122]
        with figure 6A and 7A) are associated with
        corresponding virtual action parts of the self-role.
        Moreover, the user can be sitting (see for example
        paragraph [0049]). Therefore, the user can perform
        actions whilst sitting in the operating position in
        accordance with claim feature (4).

4.3   Therefore, the subject matter of claim 1 differs from
        D1 in respect of its features 3 and 5.

The first of these (feature 3), the Board summarises as:
- setting an enlarging proportion of virtual action parts to the user's kinetic parts means setting the scaling factor by which a user's performed action is to be scaled up on its avatar virtual action part.

The second of these (feature 5), the Board summarises as:
- Scaling up the obtained [user] actions by the enlarging proportion (scaling factor) to control the the self-role [avatar] in carrying out virtual actions.
- The self role [avatar] is neither sitting nor lying when performing.
- The movement morphology of the self-role is different from and not similar to the movement morphology of the user, and
- the user's part supported by the operation position is different from the self-role's part supported by the virtual environment (for example the seated real world user is supported by their buttocks, whereas the avatar is supported by the soles of its feet in the virtual game world, cf. published application paragraph [0059]).
- the user remains at the operating position while performing the actions required for controlling the virtual action of the self-role.

4.4   In the Board's view, all these differing features are governed by the rules of the game concerned.

4.4.1   Taking a certain movement in the real world and scaling it up in the movement of an avatar will be perceived by the player as belonging to the framework and conventions of the game. They will know that, in the

game context, when they wish the avatar to make a
certain movement of its action part (for example a leg)
in the virtual world, they need to move the
corresponding part of their body (their leg) by a
certain smaller amount in the real world. This scaling
up of a real world movement in a game world is a
typical game concept. For example, in a notorious
joystick controlled game, a small joystick movement
typically maps onto a much larger movement of an entity
being controlled in the game world and the player
understands this to be part of the convention of the
game.

The game rules governing this movement (and scaling)
part of the claim could be worded as follows:

1. To make the avatar's (self-role's) limb carry out a
particular action the player moves their corresponding
limb, but in a different and not similar way and scaled
down by a scaling factor.

4.4.2   The remaining differing features relate to rules about
what actions are possible in both the real and virtual
world. These rules could read as follows:

2. The player must be seated or lying down when
controlling their avatar.

3. The player's avatar performs actions without sitting
or lying down.

In the Board's view, rules 2 and 3 imply a further
condition (that is also a rule) that could be expressed
as:

4. When the player is seated or lying to play the game, the part supporting them is different from the part of the avatar supported in the game world.

4.5   Adopting the approach outlined above, inventive step cannot be found in the mere technical implementation of the above rules, but must reside in the particular manner of implementation. It is therefore necessary to consider how these rules are implemented in the game method of claim 1.

4.6   This question is to be considered from the point of view of the skilled person - here a gaming software engineer - solving the objective technical problem of modifying D1's man-machine interaction controlling method to implement the above rules.

4.7   In the Board's view, in implementing the above rules the skilled person will inevitably arrive at the subject matter of claim 1.

4.7.1   In implementing rule 1, the skilled person will inevitably arrive at the step of setting an enlarging proportion (scaling factor) as is claimed in step 3. To actually make the avatar move, the only way to implement the rule is to enlarge [user] actions by the enlarging proportion (scale them up) and, moreover, make the avatar's actions (movement morphology) neither the same nor similar to the one performed by the user (claim step 5, first part and middle part).

4.7.2   Implementing rule 2, the skilled person will inevitably require the user to sit when performing actions, thus they will inevitably arrive at claim step 4 (and the last part of claim step 5).

4.7.3   In implementing rule 3, the skilled person has no
        choice but to design the game so that the avatar
        neither sits nor lies down when in action. Thus, the
        skilled person will arrive at the claim feature
        governing the avatar moving differently and not
        similarly to the user, (movement morphology) and,
        furthermore, since the user must be seated or lying
        down but the avatar is not, the skilled person will
        inevitably have the avatar differently supported than
        the user, as the penultimate part of claim feature 5
        requires.

4.8   Therefore, starting from D1, when implementing the
        above game rules, the skilled person will arrive at the
        subject matter of claim 1, without having made an
        inventive step.

5.   Main request, claim 16, inventive step

        Claim 16 mainly corresponds to claim 1 in terms of
        system (device) features. The Board sees corresponding
        features as obvious for the same reasons outlined above
        for claim 1.

        Claim 16 also adds an imaging device for capturing user
        actions. This feature is known from D1 (see paragraph
        [0017], first three lines). Therefore, it cannot
        contribute inventive step.

5.1   Claim 16 also adds an obstacle system for limiting the
        movement range of a user's limbs and ensure the user
        continuously performs any action.

        The Board understands the latter part of this feature
        (cf. published application, paragraph [0028] and
        [0076], [0170]) to mean that the obstacle limiting

system not only limits the extent to which a user can
move a limb but can also detect a position (for example
when the user's limb reaches an end stop) at which the
user's avatar should continuously perform an action.

5.2   Claim 16 furthermore adds that an action range of the
       virtual action part of the self-role has a plurality of
       enlarging portions at different times with respect to
       an action range of the user's [limb].

5.3   Lastly the claim adds a relationship between the action
       performed my the user Mt, the action Nt carried out by
       the self role (avatar) and upper limits of M and N.

       The feature appears merely to express, albeit in
       different terms, that user action ranges are scaled up
       by an enlarging portion to produce the self-role
       virtual action (as in claim 1, feature 5) and that both
       have respective maximums as is already implicit from
       claim 16's feature that the user's movement is limited
       to a maximum range M.

5.4   In the Board's view, game rules also underpin these
       features. With respect to the obstacle limiting
       feature, the underlying rule could be expressed as:

       5. In the game the player may only move a controlling
       limb by up to a certain amount to make their avatar's
       (self-role's) virtual limb carry out an action and when
       the user reaches this limit their avatar continuously
       carries out the action.

       Regarding the plurality of enlarging portions with
       time, this too is part of the game convention and the
       player will understand it as such. They will know that,
       in the game, as they manipulate their avatar the amount

by which their limb movements are scaled up changes
with time.

6. The game rule could be expressed as an addition to
rule 1 above, reading: the scaling factor varies with
time.

7. Lastly, the relationship between M and N amounts to
the rule: To make the avatar's (self-role's) limb carry
out a particular action the player moves their
corresponding limb by a smaller amount. This rule is
part of rule 1, considered above for claim 1 (scaling
factor).

5.5   In the Board's view, the implementation of the
        additional rules 5 and 6 does not imply an inventive
        step.

        In implementing rule 5, which dictates that a limb may
        not be moved beyond a certain upper limit, it is
        obvious to restrict the limb's movement to this upper
        limit. In other words, the claimed obstacle system is
        obvious. Moreover, if the avatar must continue to move
        when this upper limit is reached, then the skilled
        person will programme it to do so using their routine
        skills.

        Regarding rule 6 (enlarging proportion changes with
        time), the skilled person will likewise programme this
        to happen merely by applying their routine programming
        skills.

5.6   The Board concludes that the subject matter of claim 16
        does not involve an inventive step.

6.   First auxiliary request, claim 1, inventive step

The Board considers that claim 1 lacks inventive step for much the same reasons as apply to the main request.

The claim adds that a user's actions are micro-actions and that different enlarging proportions (scaling factors) are set for different limbs. In the Board's view, additional game rules also underlie these features. The rules could be worded:

- A player may only make micro movements when manipulating their avatar, and
- the scaling factor varies from limb to limb.

In the Board's view, tasked with implementing these rules the skilled person would simply apply their routine programme the game to behave according to these rules and thereby arrive at the subject matter of claim 1.

7.   Second auxiliary request, claim 1, inventive step

7.1   Claim 1 adds to claim 1 of the first auxiliary request the idea that the virtual action part of the self-role has a plurality of enlarging portions at different times with respect to an action range of the user's [limb]. This has already been discussed for the main request, claim 16. For the reasons already explained, the Board does not consider the feature to contribute to an inventive step. Therefore, claim 1 lacks inventive step starting from D1 and considering the skilled person's general knowledge.

8.   For the above reasons, the Board concludes that at least claim 1 of all requests lacks inventive step, Article 56 EPC. All the requests fail for at least this

reason, thus the question of their admittance can be
left undecided. It follows from the above that the
Board must dismiss the appeal.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Voyé   J. Wright

Decision electronically authenticated