Internal distribution code:
(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

**Datasheet for the decision
of 17 March 2017**

Case Number: T 2104/11 - 3.5.07

Application Number: 09151028.9

Publication Number: 2184686

IPC: G06F17/27

Language of the proceedings: EN

Title of invention:
Method and system for generating derivative words

Applicant:
Guangdong Guobi Technology Co. Ltd.

Headword:
Generating derivative words/GUANGDONG GUOBI

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (no)

Decisions cited:

Catchword:

This datasheet is not part of the Decision.
It can be changed at any time and without notice.

Case Number: T 2104/11 - 3.5.07

D E C I S I O N
of Technical Board of Appeal 3.5.07
of 17 March 2017

Appellant:	Guangdong Guobi Technology Co. Ltd.
(Applicant)	West Tower 1310
	Yangcheng International Trade Center
	Tiyu Dong Road
	Tianhe
	Guangzhou, Guangdong 51-075 (CN)
Representative:	Gervasi, Gemma
	Notarbartolo & Gervasi GmbH
	Bavariaring 21
	80336 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 10 June 2011 refusing European patent application No. 09151028.9 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	R. Moufang
Members:	M. Jaedicke
	P. San-Bento Furtado

Summary of Facts and Submissions

I.   The applicant (appellant) appealed against the decision
        of the Examining Division refusing European patent
        application No. 09151028.9 claiming a priority date of
        7 November 2008.

II.   The Examining Division decided that the subject-matter
        of the independent claims of the then pending sole
        request lacked novelty in view of the following
        document:

        D1:   EP 1 752 862, published on 14 February 2007.

III.   In the written proceedings the Examining Division cited
        the following further prior-art document:

        D2:   Aliprandi, C. et al.: "An Inflected-Sensitive
               Letter and Word Prediction System", International
               Journal of Computing & Information Sciences,
               vol. 5, no. 2, pages 79 to 85, published in
               August 2007.

IV.   With the statement of grounds of appeal, the appellant
        requested that the decision be set aside and that a
        patent be granted on the basis of a newly submitted
        amended sole request. The appellant also submitted
        arguments in favour of novelty and inventive step.

V.   In a communication under Article 15(1) RPBA
        accompanying a summons to oral proceedings, the Board
        inter alia expressed its provisional opinion that the
        subject-matter of claim 1 of the sole request lacked
        inventive step over document D2.

VI.   With a letter dated 8 March 2017, the appellant
        informed the Board that it would not be attending the
        oral proceedings and requested a decision "according to
        the present state of the file". No arguments in reply
        to the Board's objection on the basis of document D2
        were submitted.

VII.   Oral proceedings were held as scheduled in the absence
        of the appellant. At the end of the oral proceedings,
        the chairman pronounced the Board's decision.

VIII.   Claim 1 of the appellant's sole request reads as
        follows:

        "A method for generating derivative words, the method
        comprising the steps of:
           1) creating a plurality of arrays of derivative
        grammar rule [*sic*] each comprising a suffix letter
        character sequence and a condition array having a part
        of speech corresponding to that of the base words as
        required by corresponding suffix letter character
        sequence;
           2) inputting a user character sequence;
           3) matching the user character sequence with each
        array of derivative grammar rules and obtaining the
        arrays of derivative grammar rules which match with the
        user character sequence;
           4) obtaining words meeting the requirement of the
        condition arrays of the obtained arrays of derivative
        grammar rules from a language database in accordance
        with the user character sequence, and generating
        derivative words via adding the suffix letter character
        sequences to the obtained words, the suffix letter
        character sequences being comprised in the arrays of
        derivative grammar rules which comprise the condition
        arrays as met by the obtained words; and

5) outputting the generated derivative words."

Reasons for the Decision

1.   The appeal complies with the provisions referred to in
        Rule 101 EPC and is therefore admissible.

The invention

2.   The application relates to a method and system for
        generating derivative words. Using a set of derivative
        grammar rules for generating suffixes for words of an
        inflected natural language, and a language database
        containing words of this natural language, the method
        matches a character sequence input by a user (for
        example using a reduced keyboard as known from mobile
        phones or a handwriting input device) with the suffix
        character sequences of the grammar rules. Next it
        obtains words meeting the conditions of the matched
        grammar rules and the input character sequence from the
        language database. It applies the grammar rules to the
        obtained words to generate derivative words, which are
        output.

        For example, when the user inputs the character
        sequence "workin", the invention might output the word
        "working" as a derivative word using a grammar rule
        with the suffix character sequence "ing", which partly
        matches the last two characters "in" of the input
        character sequence "workin" (see paragraph [0087] of
        the description).

        The purpose of the invention is to provide a method and
        system which is able to reduce the storage space of a
        language database for inflected languages. This is

solved by using grammar rules (also known as
morphological rules) to generate derivative words, thus
eliminating the need to store these derivative words in
the language database. A possible application of the
method is in word-prediction systems which allow users
to input natural language with less effort (for example
fewer keystrokes, in particular when using reduced
keyboards with keys that are ambiguous, i.e. correspond
to several different characters).

Inventive step – Articles 52(1) and 56 EPC

3.   According to the contested decision, the then pending
        claim 1 lacked novelty over document D1. This claim
        differs from claim 1 of the appellant's current sole
        request in that it included features relating to the
        use of key character sequences from a reduced keyboard,
        and in that it did not contain the step of outputting
        the generated derivative words.

        While document D1 concerns a system for word prediction
        in the context of a reduced keyboard, it discloses
        merely grammar rules for generating compound nouns and
        does not specifically address the problem of suffix
        generation in general.

        As the pending method claim 1 no longer relates to the
        use of a reduced keyboard, document D2 is more
        relevant: it addresses *inter alia* the problem of
        generating word completions based on grammar rules for
        identifying a correct suffix in a method of word
        prediction.

4.   Document D2 presents FastType, a system for word and
        letter prediction for Italian, which is an inflected
        language in which the correct word form depends on the

context. FastType suggests correct and well-formed
words to users. It helps to minimise the number of
keystrokes and is said to be particularly useful for
users with motor impairments or speech or language
disabilities such as dyslexia and for non-native users.
For this purpose, document D2 describes a computer-
implemented word prediction system.

Document D2 discloses in section 4 and Figure 1 the use
of linguistic resources (see D2, page 81, right-hand
column, last paragraph), comprising a dictionary
(corresponding to the "language database" in claim 1)
and "grammar", for providing morphological information
including suffix letter character sequences. D2
explains this use of grammar rules based on parts of
speech for example in page 83, left-hand column, first
full paragraph:

> "As discussed in the previous sections, Italian is
> a very inflected language, with many variations and
> morphological forms that make it difficult to
> predict appropriate words. The main idea is to
> parse the sentence and, applying a context-aware
> sieve, to provide only inflected completions in
> accordance with the context for p_n. Specifically,
> as shown in Figure 3, given a candidate Part-of-
> Speech POS_n, p_n completions are extracted from the
> dictionary and filtered by the Morpho-syntactic
> Sieve. Words which do not agree with the candidate
> POS_n are discarded, the others are on-the-fly
> inflected and ranked into the list of Inflected
> Suggestions."

A skilled person reading document D2 understands that
the morphological rules are conditionally applied based
on the part of speech of the base word (for example,

nouns and verbs have different suffixes). Hence, D2
discloses step 1 of the method of claim 1.

Document D2 explicitly discloses inputting a character
sequence as specified in step 2 of claim 1 in
section 6, second paragraph ("suppose the following
sequence of words has been typed so far ...") and in
section 6, last paragraph, first sentence.

Moreover, document D2 teaches extracting word
completions from the dictionary and filtering the
possible completions using part-of-speech analysis:
words which do not agree with the candidate part-of-
speech are discarded (see D2, section 6, paragraphs 2
and 3 and Figure 3). D2 also discloses generating via
an inflection function, using grammar rules (called a
"morpho-syntactic sieve" in D2), inflected suggestions/
word completions in section 6 and Figure 3. Document D2
illustrates this method in the last paragraph of
section 6: if the user wishes to type the Italian
phrase "la ragazza scrive" (the girl writes), the
system predicts after receiving the input "la" that the
next word is a feminine singular noun. Hence, when the
user then types the characters "rag", the system
suggests inter alia the word "ragazza", which is the
properly inflected form of the word baseform "ragazzo".

Document D2 also discloses that the on-the-fly
inflected words are output as suggestions in a
suggestion list and thus anticipates step 5 of the
claimed method (see D2, Figure 3 and page 83, left-hand
column, last paragraph: "ragazza" and "scrive" are
exemplary inflected words output as suggestions in
response to the user input character sequences "la rag"
and "sc").

5.   With the statement of grounds of appeal, the appellant
        submitted that D1 failed to "disclose, teach, or
        suggest" certain features of present claim 1. In
        addition, it submitted that D2 also failed "to
        disclose, teach, or suggest" these features. Hence, the
        subject-matter of claim 1 was not only novel, but also
        inventive. The appellant argued that the generation of
        derivative words (for example "patents", "patenting"
        and "patentable") was achieved by the method of claim 1
        by combining an input character sequence such as
        "patent" and a suffix character sequence such as "s",
        "ing" or "able". Hence, the suffix character sequences
        did not need to be input by a user to generate and
        output the derivative words. Moreover, it was not
        necessary to pre-store the derivative words in a
        language database.

        The system according to document D2 outputs derivative
        words with a suffix in response to an input character
        sequence (see D2, page 83, left-hand column, last
        paragraph: "[...] So, typing the user 'rag', 'ragazza'
        will be one of the suggestions, since it is the
        singular form [...]"). As this example shows, D2
        already discloses that the user does not need to input
        the suffix character sequence. Moreover, D2 does not
        pre-store all derivative words in the dictionary, as it
        inflects the words extracted from the dictionary on-
        the-fly to generate the properly inflected word form.
        Hence, to reduce the size of the dictionary cannot be,
        as argued by the appellant, the effect when starting
        from D2 as closest prior art.

6.   The difference between the teaching of D2 and the
        method of claim 1 lies in how the matching between the
        grammar rules and the input character sequence is done

(steps 3 and 4 of claim 1).

In D2 the suggestions are generated by first
identifying possible completions using words from the
dictionary, filtering the possible completions using
part-of-speech analysis, and then inflecting the
resulting completions.

In the claimed method the grammar rules are first used
to identify possible matches by matching the input
character sequence with the suffix of the rules to
identify suitable rules, and then matching base words
are retrieved from the dictionary.

7. From the wording of claim 1, the Board cannot see any
    technical effect to which this difference might
    contribute, and the appellant has not submitted any
    arguments in that respect.

    The method of claim 1 achieves the generation of
    derivative words using grammar rules. The generation of
    such derivative words belongs however primarily to the
    field of linguistics. A user interface that minimises
    keystrokes by means of word prediction is already known
    from D2. The method of claim 1 does not propose any
    credible further improvement in this respect, as the
    claimed application of grammar rules means that the
    user input must already comprise part of the suffix
    (see the example of "workin" mentioned in the
    description and referred to in point 2 above; the
    appellant's example of "patent" as set out in point 5
    above is therefore not convincing), whereas the method
    of D2 can already predict a word with a morphologically
    correct suffix before the user has started to input the
    suffix.

It follows that the difference over the closest prior art D2 results from a different linguistic approach to solving the problem of generating variants of words. This problem is in itself only of a non-technical nature (see Case Law of the Boards of Appeal of the EPO, 8th edition 2016, I.A.2.5.3 "Word-processing") and therefore not a matter for the technically skilled person.

Moreover, as the differing features do not specify in detail how the claimed functionality is actually implemented in a computing device the Board cannot identify any further technical considerations (for example, relating to the internal functioning of a computer). Hence, no technical problem is solved, apart from the mere automation of a per se linguistic algorithm for matching grammar rules in order to derive words.

8.   At the priority date, the mere automation of a different kind of matching between the grammar rules and the input character sequence was a routine development that could be accomplished without any need for inventive skills by a software engineer starting from document D2.

9.   Consequently, the method of claim 1 lacks inventive step over document D2 (Articles 52(1) and 56 EPC).

Conclusion

10.   As the appellant's sole request cannot form the basis for the grant of a patent, the appeal has to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

I. Aperribay   R. Moufang

Decision electronically authenticated