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**Datasheet for the decision
of 23 April 2024**

Case Number: T 1140/22 - 3.5.07

Application Number: 14736143.0

Publication Number: 3011472

IPC: G06F17/27, G10L15/18

Language of the proceedings: EN

Title of invention:

Building conversational understanding systems using a tool set

Applicant:

Microsoft Technology Licensing, LLC

Relevant legal provisions:

EPC Art. 84, 123(2)
RPBA 2020 Art. 13(2)

Keyword:

Amendment after summons - exceptional circumstances - first,
third and fifth auxiliary request (yes)
Claims - clarity - main request and first to fourth auxiliary
requests (no)
Amendments - added subject-matter - fifth auxiliary request
(yes)

Decisions cited:

T 0002/80, T 0412/03, T 0129/13, T 1531/21



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Case Number: T 1140/22 - 3.5.07

D E C I S I O N
of Technical Board of Appeal 3.5.07
of 23 April 2024

Appellant: Microsoft Technology Licensing, LLC
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Representative: Goddar, Heinz J.
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 26 November
2021 refusing European patent application
No. 14736143.0 pursuant to Article 97(2) EPC**

Composition of the Board:

Chair J. Geschwind
Members: M. Jaedicke
P. San-Bento Furtado

Summary of Facts and Submissions

- I. The appellant (applicant) appealed against the examining division's decision refusing European patent application No. 14736143.0, which was filed as international application PCT/US2014/041023 (published as WO 2014/204659).
- II. The documents cited in the contested decision included:
D3 F. Keshtkar et al., "A Corpus-based Method for Extracting Paraphrases of Emotion Terms", Proceedings of the NAACL HLT 2010 Workshop on Computational Approaches to Analysis and Generation of Emotion in Text, June 2010, pp. 35-44
D4 US 2007/0156392 A1, published on 5 July 2007
- III. The examining division refused the application on the grounds that the subject-matter of the independent claims of the main request and of each of the first and second auxiliary requests lacked inventive step over the prior art disclosed in document D4. In an *obiter dictum*, the examining division considered that the dependent claims of all the requests lacked inventive step, citing document D3 in addition to D4 for dependent claim 2.
- IV. In its statement of grounds of appeal, the appellant requested that the contested decision be set aside and that a patent be granted on the basis of the main request or either the first or second auxiliary request, all requests as considered in the contested decision.

- V. In a communication under Article 15(1) RPBA accompanying the summons to oral proceedings, the board expressed among other things its provisional opinion that the subject-matter of claim 1 of each substantive request did not meet the requirements of Articles 123(2), 84 and 56 EPC.
- VI. By letter of 6 March 2024, the appellant submitted new first, third and fifth auxiliary requests and maintained its prior requests as its main request and second and fourth auxiliary requests.
- VII. Oral proceedings were held as scheduled and the appellant was heard on relevant issues. At the end of the oral proceedings, the Chair announced the board's decision.
- VIII. The appellant's final requests were that the contested decision be set aside and that a patent be granted on the basis of the main request or one of the first to fifth auxiliary requests.
- IX. Claim 1 of the main request reads as follows:
"A method for automatically detecting domains and actions from example Natural Language, NL, sentences, the method comprising:
 receiving (410) the examples of NL sentences;
 automatically determining (420) a domain associated with the example NL sentences;
 automatically determining (430) an intent action associated with the domain, wherein determining the intent action comprises
 providing an add intent action option (224), and
 receiving a selection of the add intent action option including a new intent action to label an example NL sentence;

automatically updating (460) models for a Conversational Understanding, CU, service based on the determined domain and the new intent action; and making the models available to the CU service."

X. Claim 1 of the first auxiliary request differs from claim 1 of the main request in that the text after "automatically determining (420) a domain associated with the example NL sentences;" has been amended as follows:

"determining (430) one or more intent actions associated with the domain, wherein determining the one or more intent actions comprises

detecting the one or more intent actions depending on the intent actions already included in an intent action model of a Conversational Understanding, CU, service,

providing an add intent action option (224), and receiving from a user a selection of the add intent action option including a new intent action to label an example NL sentence;

automatically updating (460) the intent action model for the CU service based on the determined domain and the new intent action; and

making the intent action model available to the CU service."

XI. Claim 1 of the second auxiliary request differs from claim 1 of the main request in that:

- the text "determining and displaying intent actions with confidence scores for an example NL sentence (205) that currently exist in a Conversational Understanding, CU, service, and" has been added after "wherein determining the intent action comprises"

- "automatically updating (460) models for a Conversational Understanding, CU, service" has been amended to read "automatically updating (460) models for the CU service".

XII. Claim 1 of the third auxiliary request differs from claim 1 of the first auxiliary request in that:

- the text "determining and displaying the intent actions with confidence scores for an example NL sentence (205) that currently exist in the CU service, and" has been inserted after "already included in an intent action model of a Conversational Understanding, CU, service,"
- the text "(224)" has been added after the text "a selection of the add intent action option"
- the text "(205)" has been added after the text "to label an example NL sentence"

XIII. Claim 1 of the fourth auxiliary request differs from claim 1 of the main request in that:

- the following text has been inserted after the text "including a new intent action to label an example NL sentence;":
 - "automatically determining (440) an intent object for each determined intent action, wherein determining the intent object comprises
 - providing an add intent object option (234), and
 - receiving a selection of the add intent action option including a new intent object to label an example NL sentence;
 - automatically performing (450) slot tagging for each example NL sentence, wherein slot tagging comprises
 - providing an add new slot option (244), and
 - receiving a selection of the add new slot option

including a new slot name to label a sequence in an example NL sentence;"

- the text "automatically updating (460) models [...] the new slot name;" has been amended to read "automatically updating (460) models for a Conversational Understanding, CU, service based on the determined domain, the new intent action, the new intent object, and the new slot name;"

XIV. Claim 1 of the fifth auxiliary request differs from claim 1 of the first auxiliary request in that the text after "including a new intent action to label an example NL sentence;" has been amended as follows:

"determining (440) one or more intent objects that relate to each of the one or more determined intent actions, wherein determining the intent object comprises

detecting the one or more intent objects depending on the intent objects already included in an intent object model of the CU service,

providing an add intent object option (234), and receiving from the user a selection of the add intent object option including a new intent object to label an example NL sentence of the examples of NL sentences;

performing (450) slot tagging for each example NL sentence, wherein slot tagging comprises

detecting slots included in a slot model of the CU service,

the user highlighting one or more sequences in the example NL sentence,

providing an add new slot option (244) for the example NL sentence, and

receiving from the user a selection of the add new slot option including a new slot name to label the one or more sequences in the example NL sentence;

automatically updating (460) models including the intent action model, the intent object model, and a slot model for the CU service based on the determined domain, the new intent action, the new intent object, and the new slot name; and

making the models available to the CU service."

- XV. The appellant's arguments relevant to the present decision are discussed in detail below.

Reasons for the Decision

The invention

1. The application relates to building conversational understanding systems using a tool set.

The description of the application as published, page 1, line 5 to page 2, line 2, provides a summary of the invention. Conversational understanding systems are used for a variety of different applications, for example to allow users to search for content, buy items or obtain directions.

Developers may build conversational understanding systems with the aid of tools that are available in a conversational understanding service or platform. The tools may include, for example, labelling tools, training tools or validation tools.

A developer may provide example natural language sentences that are analysed by the tools to help the developer label data that are used to update the models in the conversational understanding service. The tools may assist a developer in identifying "domains" and determining "intent actions", "intent objects" and

"slots" from example natural language sentences. The tools automatically determine possible labels for the example natural language sentences and allow the user to create new domains, intent actions, intent objects and slots. A developer may use the tools to add their own tags for intents and slots or select automatically determined tags. After the developer tags all or some of the example natural language sentences, the models in the conversational understanding service are automatically updated and validated. For example, validation tools may be used to determine the accuracy of the model against test data.

According to the description, page 3, lines 18 to 21, a domain is an area that is associated with a set of actions (movie domain, music domain, book domain, game domain, flight domain and so on). The conversational understanding service is trained to understand this area and the associated actions. Domains are typically related to a specific area but may also include more than one area.

The description discloses on page 4, lines 23 to 27 that an intent action is the action to be performed (find, post, play, buy, etc.) in an example natural language sentence. An intent action detector may predict the intent action for a current natural language sentence to be a get action, a find action, a post action, a play action and the like. The predicted intent action may be displayed on a graphical user interface.

For each determined intent action, one or more intent objects are identified by an intent object detector. An intent object is an object (movie, picture, item, etc.)

that relates to that determined intent action (see description, page 4, lines 28 to 31).

The description explains that slots in a movie domain may include e.g. the movie star, movie release date and movie rating, and slots in a travel domain may include e.g. the departure location, departure time, arrival time, arrival destination and travel constraints (page 3, lines 1 to 9; page 10, lines 8 to 20). Slot tagging is performed by a slot tagging component using the determined domains, intent actions and intent objects. Generally, slot tagging identifies which slots are associated with the words of a natural language sentence. The example natural language sentences may be automatically tagged using the slot predictions and then corrected by the developer. For example, a developer may use a graphical user interface to change the tagging. The results of slot tagging may be displayed on a graphical user interface (description, page 5, lines 1 to 6).

According to an embodiment, for each domain that is added to a conversational understanding service, a fixed number of existing models is updated to reflect the newly added domain. According to an embodiment, the models include a domain model, an intent action model, an intent object model and a slot model. According to another embodiment, new models may be created when a new domain is added (description, page 3, lines 23 to 27).

Generally, natural language understanding in a goal-oriented conversational understanding service is directed at identifying the domain(s) and intent(s) of the user, as expressed in natural language, and to

extract associated arguments or slots (description, page 3, lines 1 to 4).

Main request, second and fourth auxiliary requests

2. *Clarity*

- 2.1 Claim 1 specifies a step of "automatically determining (430) an intent action associated with the domain" which comprises the steps of "providing an add intent action option" and "receiving a selection of the add intent action option including a new intent action to label an example NL sentence" (see point IX. above).
- 2.2 In its communication, the board held that it appeared to be unclear whether or how the "new intent action" was related to the determined intent action and which entity selected the intent action option. If the selection was received from a human developer, then the intent action was determined manually, not automatically. Consequently, claim 1 appeared to be unclear (Article 84 EPC). This objection also applied to the then pending auxiliary requests, i.e. the current second and fourth auxiliary requests (see points 6 and 9.2 of the communication).
- 2.3 In its letter of 6 March 2024, the appellant responded to the board's objection by filing the amended first, third and fifth auxiliary requests which addressed the board's objections under Articles 84 and 123(2) EPC. These auxiliary requests clarified that a user selected the add intent action option. At the oral proceedings, the appellant relied on its written submissions with regard to this objection against the main request and second and fourth auxiliary requests.

2.4 Since the board sees no reason to deviate from its preliminary opinion on the clarity of claim 1 of each of the main request and the second and fourth auxiliary requests, these requests are unclear (Article 84 EPC).

First, third and fifth auxiliary requests

3. *Admissibility under Article 13(2) RPBA*

The first, third and fifth auxiliary requests were filed in direct response to fresh objections raised in the board's communication under Article 15(1) RPBA. Given that these fresh objections constitute exceptional circumstances within the meaning of Article 13(2) RPBA, the board admits the first, third and fifth auxiliary requests into the appeal proceedings.

4. *First and third auxiliary requests - clarity*

4.1 In its communication, the board objected to the main request on the grounds that it appeared to be unclear (Article 84 EPC) which features were encompassed by the "models" for a conversational understanding service. In particular, it appeared to be unclear which features were implied by the wording "model" beyond "data". At the oral proceedings, the board informed the appellant that this objection also appeared to apply to the amended wording "intent action model" in the first and third auxiliary requests.

4.1.1 At the oral proceedings, the appellant argued that the skilled person's understanding of the term "model" resulted from the description as filed as a whole. An intent action model included several intent action instances. The description did not include any

definition of the term "model" that could be included in the claim. Consequently, there was no possibility to further amend claim 1 to clarify the term "intent action model". When asked by the board to indicate relevant passages of the description which could help the skilled person to understand the features under discussion, the appellant cited paragraphs [0059], [0061] and [0063].

- 4.1.2 The board agrees that claim 1 specifies that the "intent action model" includes "intent actions" (see the step "detecting the one or more intent actions depending on the intent actions already included in an intent action model of a Conversational Understanding, CU, service" in claim 1). Moreover, claim 1 specifies that the "intent action model" is updated according to the penultimate step of claim 1 ("automatically updating (460) the intent action model for the CU service based on the determined domain and the new intent action"). However, this does not mean that the skilled person can understand what the "intent action model" encompasses. For example, it remains unclear whether the determined domain forms part of the intent action model.
- 4.1.3 Moreover, at the oral proceedings, the board informed the appellant that it preliminarily considered that the step of "automatically updating (460) the intent action model for the CU service based on the determined domain and the new intent action" in the first and third auxiliary requests was unclear (Article 84 EPC). In particular, it was not clear how the intent action model was updated "based on the determined domain". While it seemed to be reasonable to interpret the updating step as implying that the received new intent action was added to the intent action model when it was

updated, it was unclear why this update was "based on the determined domain" and what this implied. In the board's opinion, updating the intent action model "based on the determined domain" raises the question of whether the intent action model is also updated with information about the determined domain.

4.1.4 At the oral proceedings, the appellant submitted that the basis for the updating step in the first and third auxiliary requests was provided in paragraphs [0056] and [0061] of the application as filed. The appellant submitted that an intent action was subordinate to a domain. Determining an intent action for a given sentence involved determining the domain into which the given sentence fell and then detecting the intent action for that domain.

4.1.5 Paragraphs [0061] and [0063] of the description, which the appellant cited in support of its arguments, describe operations 530 (updating the intent action model) and 550 (updating the slot model). Both steps are part of the method depicted in Figure 5 of the application. According to paragraph [0058], Figure 5 shows a process for adding or updating a domain that is associated with a conversational understanding system. The board notes that the determined domain is neither updated nor added according to claim 1, but merely automatically determined. Consequently, the wording of claim 1 does not imply any need to update a domain. It follows that claim 1 encompasses methods not illustrated by Figure 5, and so the cited paragraphs relating to this figure cannot help the skilled person to understand the updating step over the whole scope of the claim.

Paragraph [0059] is also in the context of Figure 5 and concerns operation 510 of the flowchart, where a domain to be updated or added to a conversational understanding service is determined. While paragraphs [0059] and [0061] disclose that an "intent action model" might be updated, neither paragraph discloses anything that would explain what is meant by updating the "intent action model [...] based on the determined domain". Furthermore, paragraph [0063] of the description concerns an update to the slot model, which is not claimed in the first or third auxiliary request.

The cited paragraph [0056] states that during operation 460 of the flowchart according to Figure 4, "models for the CU system are updated or customized" and that "[a]ccording to an embodiment, new models may be trained". Since paragraph [0056] contains no specific information on intent action models, the board is not convinced that this paragraph can help the skilled person to understand how the "intent action model" is updated "based on the determined domain" or what data the "intent action model" comprises.

- 4.2 In view of the above, the board is not convinced that the skilled person, even when reading claim 1 in the context of the description and drawings of the application, could understand the "intent action model" and the updating step according to claim 1 of the first or third auxiliary request.

These clarity issues are particularly severe in the context of the case in hand since the alleged effect of the claimed method was to improve the model(s) of the conversational understanding service, which evidently depends on what the model(s) are and how exactly they are updated.

The board further notes that in accordance with established case law the requirement for the claims to be clear as stipulated by Article 84 EPC is even more strict: the wording of the claims as such has to be clear for a person skilled in the art with common general knowledge of the technical field in question. It has to be possible to understand the claims without reference to the description (see decisions T 2/80, Reasons 2; T 412/03, Reasons 2.4.1; T 129/13, Reasons 3.5; T 1531/21, Reasons 3.3).

4.3 It follows that claim 1 of each of the first and third auxiliary requests is unclear (Article 84 EPC).

5. *Fifth auxiliary request - added subject-matter*

5.1 Claim 1 of the fifth auxiliary request comprises the amended step of "automatically updating (460) models including the intent action model, the intent object model, and a slot model for the CU service based on the determined domain, the new intent action, the new intent object, and the new slot name".

5.2 At the oral proceedings, the board informed the appellant of its provisional opinion that the amended updating step according to the fifth auxiliary request was not directly and unambiguously derivable from the application as filed, i.e. it infringed Article 123(2) EPC. In particular, the board had doubts that the application as filed disclosed that the various models mentioned in the updating step of claim 1 were updated "based on the determined domain, the new intent action, the new intent object, and the new slot name".

5.3 The appellant argued that the basis for the amended updating step of claim 1 was paragraphs [0056], [0059] and [0061] of the description and originally filed claim 1. The application as filed implicitly disclosed in Figures 4 and 5 that the "intent action model" was always updated when a user added an intent action. The word "including" in the step "automatically updating (460) models including the intent action model" left open the possibility of something else also being updated.

5.4 In the board's view, the wording of the updating step of claim 1 encompasses, for example, updating the intent action model on the basis of the determined domain, the new intent action, the new intent object and the new slot name. However, as explained in the following, no such update is disclosed in any of the passages of the application as filed that the appellant cited as a basis.

As already discussed above in point 4.1.5, paragraphs [0059], [0061] and [0063] relate to Figure 5, which concerns a "process for updating or adding a domain". Yet claim 1 is not limited to updating or adding a domain. Paragraph [0056] merely discloses updating or customising training models but does not provide any details. None of the cited paragraphs discloses updating the intent action model on the basis of a new intent object and/or a new slot name.

Claim 1 as originally filed specifies the updating step as "automatically updating models for the CU service based on the selection of the APIs and the determined domain". It is evident that this general disclosure of updating models on the basis of the determined domain cannot provide any basis for the more specific step of

updating the intent action model on the basis of a new intent object and/or a new slot name.

5.5 In view of the above, claim 1 of the fifth auxiliary request infringes Article 123(2) EPC.

Conclusion

6. Since none of the appellant's requests can form the basis for the grant of a patent, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:



S. Lichtenvort

J. Geschwind

Decision electronically authenticated