

Applicant: Valyant AI, LLC
Attorney Docket No.: 1397-4
Serial No.: Not Assigned
For: Artificially Intelligent Order Processing System
Filed: Herewith

Accelerated Examination Support Document

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This accelerated examination support document is provided in support of the petition for accelerated examination filed herewith.

There are twenty claims currently pending in the application. The claims read as follows:

1. A method of training a natural language ordering system comprising the steps of:
providing an audio stream of customer ordering transactions;
slicing the audio stream into short clips;
transcribing the short clips into text using a transcription unit;
adding metadata tags to the transcribed text using the transcription unit;
training a speech-to-text system by populating ~~the system~~ *the artificially intelligent order processing system* with the transcribed text having the metadata tags.

2. The method according to claim 1 wherein the transcription unit is a crowd source platform.

3. The method according to claim 1 wherein the metadata tags provide data regarding tone or inflection that would be lost in a traditional speech-to-text conversion.

4. The method according to claim 1 wherein the speech-to-text system employs a deep neural network.

5. The method according to claim 1 further comprising the steps of:
identifying a word or phrase in the text using the speech-to-text processor; and
providing meaning for the identified word or phrase using a natural language processor.

6. The method according to claim 5 further comprising the step of generating an order with a business processor using the identified word or phrase from the natural language processor.

7. The method according to claim 5 wherein the natural language processor is configured to trigger an alert when a warning condition is encountered.

8. The method according to claim 7 wherein the warning condition is a word or phrase indicative of customer dissatisfaction or confusion.

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9. The method according to claim 1 wherein the audio stream used for text transcription is a stream from a customer accessible microphone to a base station.

10. The method according to claim 9 wherein further comprising the step of decreasing the strength of the audio stream prior to transmission to the transcription unit.

11. A method of speech recognition-based order processing comprising the steps of:
 providing an audio stream of a customer order;
 providing an order processor having a ~~speech recognition module~~ trained using artificial intelligence programs;
 converting a word or words in the audio stream to text using the ~~speech recognition module~~;
 processing the text communication with the ~~speech recognition module~~ to identify a word or words in the text of the converted audio stream according to a previous spoken word training;
 providing a natural language processor having order assembly capabilities and exception detection capabilities, wherein the natural language processor receives recognized text from the order processor and creates or modifies an order based upon the recognized text;
 generating an order with the natural language processor;
 alerting an auditor of detected exceptions in the order; and
 transmitting the order to a business processor, wherein the business processor communicates with a point-of-sale system to collect payment and provide notifications to release the ordered product or service.

12. The method according to claim 11 wherein the order is processed in real time.

13. The method according to claim 11 wherein the business processor receives order information from the NLP and performs the steps of:
 associating the order items with one or more additional menu items or options associated with the order items; and
 querying the customer about the one or more additional menu items or options associated with the order items, wherein the NLP updates the order based upon the customer response to the query.

14. The method according to claim 13 further comprising the steps of:
 providing a text-to-speech processor to convert queries from the business processor into audio to be communicated to a customer; and
 processing the text with the text-to-speech processor to create an audio communication of the query generated by the business processor.

15. The method according to claim 12 wherein the alert to the auditor prompts the auditor to take control of the order processing system.

16. The method according to claim 15 further comprising the steps of reviewing an order by an auditor by comparing the order generated by the natural language processor to the communication in the audio stream and updating the order based upon auditor review.

17. A method of speech recognition-based order processing comprising the steps of:
 providing an audio stream of a customer order to a speech-to text processor;
 providing an order processor ~~incorporating~~ a speech recognition module trained using artificial intelligence programs;
 converting a word or words in the audio stream to text using the speech recognition module;

processing the text communication with the speech recognition module to identify a word or words in the text of the converted audio stream according to a previous spoken word training;
providing a natural language processor having order assembly capabilities and exception detection capabilities, wherein the natural language processor receives recognized text from the order processor and creates or modifies the order based upon the recognized text;
generating an order with the natural language processor;
providing an audio stream of a customer order to an auditor;
providing the generated order to the auditor;
performing a comparison of the audio stream of a customer order with the generated order by the auditor;
updating the order processor based upon errors detected in the order by the auditor; and
transmitting the order to a business processor, wherein the business processor communicates with a point-of-sale system to collect payment and provide notifications to release the ordered product or service.

18. The method according to claim 17 wherein the business processor receives order information from the NLP and performs the steps of:
associating the order items with one or more additional order items or options associated with the order items; and
querying the customer about the one or more additional order items or options associated with the order items, wherein the NLP updates the order based upon the customer response to the query.

19. The method according to claim 17 further comprising the steps of:
providing a text-to-speech processor to convert queries from the business processor into audio to be communicated to a customer; and
processing the text with the text-to-speech processor to create an audio communication of the query generated by the business processor.

20. The method according to claim 17 further comprising the step of alerting the auditor by the NLP of any exceptions detected by ~~the artificially intelligent order processing system~~, wherein the auditor can override ~~the artificially intelligent order processing system~~ based upon the detected exception.

9(A) References Deemed Most Closely Related:

An Information Disclosure Statement in compliance with 37 CFR 1.98 has been filed herewith citing each of the following references deemed most closely related to the subject matter of the claim.

Mahaffy et al	US 20030018531A1
Au	US 7526466B2

9(B) Identification of Limitations Disclosed by References:

Mahaffy et al (US 20030018531A1):

With respect to Claim 1, Mahaffy et al teach a system to facilitate and expedite the ordering and purchase of food items from a restaurant (Background of the Invention, [0003]) comprising:

- a) Providing an audio stream of customer ordering transactions (implied by the AI system which receives said audio signal in Claim 1); and
- b) Transcribing the short clips into text using a transcription unit (implied by processing the audio signal to at least partially recognize the verbal instruction from the customer in Claim 1).

With respect to claim 11, Mahaffy et al teach a system to facilitate and expedite the ordering and purchase of food items from a restaurant (Background of the Invention, [0003]) comprising:

- a) Providing an audio stream of a customer order (“a verbal instruction from the customer,” and “converting the verbal instruction to an audio signal” as implied by claim 1)
- b) Processing the text communication with the speech recognition module to identify a word or words in the text of the converted audio stream according to previous spoken word training (“receives said audio signal and processes said audio signal to at least partially recognize the verbal instruction from the customer” in claim 1); and
- c) Alerting an auditor of detected exceptions in the order (implied by “a human-controlled response system in communication with said first computer system and adapted intervene to interact with the customer when said AI system has not satisfactorily recognized the verbal instruction from the customer” in Claim 1).

With respect to claim 16, Mahaffy et al teach reviewing an order by an auditor by comparing the order generated by the natural language processor to the communication in the audio stream and updating the order based upon auditor review (implied by a “human-controlled response system in communication with said first computer system and adapted intervene to interact with the customer when said AI system has not satisfactorily recognized the verbal instruction from the customer.”)

With respect to claim 17, Mahaffy et al teach a system to facilitate and expedite the ordering and purchase of food items from a restaurant (Background of the Invention, [0003]) comprising:

- a) providing an audio stream of a customer order to a speech-to text processor (“a verbal instruction from the customer,” and “converting the verbal instruction to an audio signal” as implied by claim 1);
- b) converting a word or words in the audio stream to text using the speech recognition module (“a verbal instruction from the customer,” and “converting the verbal instruction to an audio signal” as implied by claim 1);
- c) providing a natural language processor having order assembly capabilities and exception detection capabilities, wherein the natural language processor receives recognized text from the order processor and creates or modifies the order based upon the recognized text (“a human-controlled response system in communication with said first computer system and adapted intervene to interact with the customer when said AI system has not satisfactorily recognized the verbal instruction from the customer” to as implied by claim 1);

Au (US 7526466B2):

With respect to Claim 1, Au teaches a system configured to “disambiguate a contextual meaning of natural language input streams” to “represent a contextual meaning of the input stream” (Summary of the Invention) comprising:

- a) “providing an audio stream of customer ordering transactions” (“receiving a natural language input at the computer system, wherein the natural language input includes one or more words” in Claim 1); and
- b) “transcribing the short clips into text using a transcription unit” (“receiving a natural language input at the computer system, wherein the natural language input includes one or more words” and “analyzing at least one of the one or more words of the natural language input using the rearranged semantic network” in Claim 1).

With respect to Claim 11, Au teaches a system configured to “disambiguate a contextual meaning of natural language input streams” to “represent a contextual meaning of the input stream” (Summary of the Invention) comprising:

- a) “providing an audio stream of a customer order” (“receiving a natural language input at the computer system, wherein the natural language input includes one or more words” in Claim 1);
- b) “converting a word or words in the audio stream to text using the speech recognition module” (“receiving a natural language input at the computer system, wherein the natural language input includes one or more words” and “analyzing at least one of the one or more words of the natural language input using the rearranged semantic network” in Claim 1); and
- c) “processing the text communication with the speech recognition module to identify a word or words in the text of the converted audio stream according to a previous spoken word training” (“receiving a natural language input at the computer system, wherein the natural language input includes one or more words” and “analyzing at least one of the one or more words of the natural language input using the rearranged semantic network” in Claim 1).

With regard to Claim 17, Au teaches a system configured to “disambiguate a contextual meaning of natural language input streams” to “represent a contextual meaning of the input stream” (Summary of the Invention) comprising:

- a) “providing an audio stream of a customer order to a speech-to text processor” (“receiving a natural language input at the computer system, wherein the natural language input includes one or more words” in Claim 1);
- b) “converting a word or words in the audio stream to text using the speech recognition module” (“receiving a natural language input at the computer system, wherein the natural language input includes one or more words” and “analyzing at least one of the one or more words of the natural language input using the rearranged semantic network” in Claim 1); and

- c) “processing the text communication with the speech recognition module to identify a word or words in the text of the converted audio stream according to a previous spoken word training” (“receiving a natural language input at the computer system, wherein the natural language input includes one or more words” and “analyzing at least one of the one or more words of the natural language input using the rearranged semantic network” in Claim 1).

9(C) Detailed Explanation of Patentability:

All of the references identified above fail to at least teach or suggest “adding metadata tags to the transcribed text using a transcription unit” as required in the third clause of Claim 1, “transmitting the order to a business processor, wherein the business processor communicates with a point-of-sale system to collect payment and provide notifications to release the ordered product or service” of Claim 11 and Claim 17. Thus, each claim is seen to patentably distinguish over each of these references alone or in combination. Dependent claims 2-10 have no features that would define over the references deemed most closely related if claim 1 was found to be unpatentable. Dependent claims 12-16 have no features that would define over the references deemed most closely related if claim 11 was found to be unpatentable. Dependent claims 18-20 have no features that would define over the references deemed most closely related if claim 17 was found to be unpatentable.

9(D) Concise Statement of Utility:

The invention as claimed has utility in that it provides for adding metadata tags to transcribed text of an ordering system, and allowing for text derived from speech recognition to collect and transmit orders. The invention as claimed has further utility in that it generates orders as derived from recognized text. The robustness of the methods claimed together with the auditing processes claimed allow for improved learning of contextual text as audited.

9(E) Showing of Support under 35 USC 112, First Paragraph:

Support for the disclosure under 35 USC 112, first paragraph is found in at least Fig. 5, where each element of the flowchart corresponds to the elements of at least Claim 1. In addition to the steps disclosed in the flowchart in Fig. 5 corresponding to the articulated method steps, the elements associated with auditing and natural language processor included in Claim 11 and Claim 17 are disclosed at least in paragraphs [00047]-[00049]. Further, the elements speech recognition module is described in at least paragraphs [0009]-[00010] and [00041].

The sole claim does not invoke 35 USC 112, sixth paragraph. There are no means- (or step-) plus-function claim elements.

9(F) Identification of References Disqualified as Prior Art under 35 USC 103(c):

None of the cited references are disqualified as prior art under 35 USC 103(c).

Respectfully Submitted,

/JRS/

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