CLAIMS

1. A system comprising:

an artificial intelligence agent system that uses a world model to facilitate responding to a query, ingesting unstructured data, and enabling enterprise domain-directed dialogue using a natural language speech processing system; and

a speech processing module of the natural language processing system that interacts with the world model that contains information about sounds produced by items associated with the enterprise to perform feature detection processing for enhancement of received speech followed by language detection of the enhanced speech, wherein the feature detection processing comprises applying deep learning speech enhancement techniques,

(i) wherein the deep learning speech enhancement techniques include comparing portions of the received speech with detected language to portions without detected language to learn non-language features of the received speech; or

(ii) wherein the deep learning speech enhancement techniques include comparing detected features from portions of received speech with detected language to detected features of portions without language to learn non-language features of the received speech.

2. The system of claim 1, wherein the items associated with the enterprise are selected from a list consisting of products of the enterprise, items of equipment of the enterprise, operational environments of the enterprise, and production environments of the enterprise.

3. The system of claim 1, wherein the feature detection processing subtracts known noise signals produced by items associated with the enterprise from speech signals to improve speech signal recognition.

4. The system of claim 1, wherein the feature detection processing comprises applying at least one of a noise classifier or a noise activity detection to the received speech.

5. The system of claim 1, wherein the feature detection processing comprises removing quasi-static low frequency noise based on correlating a measure of environmental noise with features detected in the speech and removing correlated features.

6. The system of claim 1, wherein the feature detection processing comprises detecting and removing impulse features in the received speech.

7. A system comprising:

a conversational engine that includes a speech processing module that detects and extracts features, including non-language features from speech received during a conversation with a client system;

a world model embodied as a knowledge graph of a domain of enterprise knowledge that facilitates mapping domain adapted non-language features to processing techniques that improve language recognition; and

an artificial intelligence agent system that queries the world model based on the detected non-language features and dynamically adapts the processing of speech by the speech processing module based on a response to the query.

8. The system of claim 7, wherein the processing of speech is dynamically adapted to extract known machine sounds from the conversation.

9. The system of claim 7, wherein the processing of speech is dynamically adapted to extract known impulse sounds from the conversation.

10. The system of claim 7, wherein the processing of speech is dynamically adapted to reduce an impact on language recognition of clipping of the conversation.

11. The system of claim 7, wherein the processing of speech is dynamically adapted to perform a noise reduction technique mapped by the world model to the non-language feature of the query.

12. A system comprising:

a conversational engine that includes a speech recognition module that detects and extracts features, including non-language features from speech received during a conversation with a client system;

a world model embodied as a knowledge graph of a domain of enterprise knowledge that facilitates mapping domain adapted non-language features to types of sound-producing equipment of the enterprise and includes non-language sound samples of the enterprise; and

an artificial intelligence agent system for performing recognition of non-language machine sounds in the conversation and classification of the machine sounds to predetermined specific types of equipment.

13. The system of claim 12, wherein recognition of machine sounds comprises the artificial intelligence agent system comparing recordings of machine sounds with portions of the conversation.

14. The system of claim 12, wherein classification of the machine sounds comprises the artificial intelligence agent system applying a recognized machine sound as a query to the world model for determining at least one machine type that is mapped to the machine sound.

15. The system of claim 12, wherein recognition of non-language sounds in the received speech comprises the artificial intelligence agent system comparing non-language sound samples in the world model to portions of the conversation and based on the comparing classifying portions of the conversation as at least one of language or non-language portions.

16. The system of claim 12, wherein classification of the machine sounds comprises the artificial intelligence agent system determining at least one non-language sound sample in the world model that is detectable in the conversation and querying the world model for a corresponding sound producing machine of the enterprise.

17. The system of claim 12, wherein the artificial intelligence agent system further processes the conversation to automatically recognize speech separate from the machine sounds.