FORM 2

THE PATENTS ACT, 1970

(39 of 1970)

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The Patent Rules, 2003

COMPLETE SPECIFICATION

(See sections 10 & rule 13)

1. TITLE OF THE INVENTION

ROBOTIC PERSONAL ASSISTANCE SYSTEM

2. APPLICANT (S)

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3. PREAMBLE TO THE DESCRIPTION

COMPLETE SPECIFICATION

The following specification particularly describes the invention and the manner in which it is to be performed.

TECHNICAL FIELD

[0001] The present disclosure relates generally to the field of personal assistance and more specifically relates to a robotic personal assistance system that provides voice interaction and physical mobility for enhanced user engagement.

BACKGROUND

[0002] Background description includes information that may be useful in understanding the present disclosure. It is not an admission that any of the information provided herein is prior art or relevant to the presently claimed disclosure, or that any publication specifically or implicitly referenced is prior art.

[0003] In recent years, voice assistants such as Amazon Alexa and Google Assistant have revolutionized the way we interact with technology. These virtual companions have made it incredibly convenient to perform tasks like answering questions, setting reminders, and controlling a plethora of smart devices, all through simple voice commands.

[0004] However, despite their efficiency in voice-based interactions, these systems have a significant limitation—they lack physical mobility. They are confined to verbal interactions and are unable to execute tasks that require physical movement or manipulation. This limitation has created a clear gap in the market for a more versatile and physically capable personal assistant.

[0005] One of the key challenges in developing such a holistic personal assistant lies in the communication and integration of various technologies. Achieving seamless communication between voice recognition, movement control, and different communication protocols is a complex task that demands meticulous design and consideration. Compatibility issues and the need for real-time synchronization further complicate the integration process.

[0006] There is, therefore, a need to overcome the above drawback, limitations, and shortcomings associated with the existing techniques, and provide a solution for effectively providing personal assistance through voice interaction and physical mobility for enhanced user engagement.

OBJECTS OF THE PRESENT DISCLOSURE

[0007] Some of the objects of the present disclosure, which at least one embodiment herein satisfies are as listed herein below.

[0008] An object of the present disclosure is to provide a robotic personal assistance system that is capable of understanding voice commands, navigating physical spaces, and adapting to user preferences.

[0009] An object of the present disclosure is to provide a robotic personal assistance system that possesses the capability to detect obstacles in the path of movement and make real-time adjustments to avoid collisions.

[0010] An object of the present disclosure is to provide a robotic personal assistance system that analyzes user patterns to provide personalized assistance, including recommendations, reminders, and task executions, without requiring explicit user commands.

[0011] An object of the present disclosure is to provide a robotic personal assistance system that seamlessly communicates with computing devices used by users, enabling real-time control, updates, and feedback.

SUMMARY

[0012] Various aspects of present disclosure relate to the field of personal assistance and more specifically relates to a robotic personal assistance system that provides voice interaction and physical mobility for enhanced user engagement.

[0013] According to an aspect of the present disclosure a robotic personal assistance system is disclosed that includes a control unit and a processing unit. The control unit may receive a set of commands pertaining to movement through one or more computing devices from one or more users, send one or more instructions pertaining to movement to the system and detect one or more obstacles and adjust a path of movement of the system. The processing unit may receive a set of voice commands from the one or more users, capture a set of voice input from the set of voice commands through one or more microphones, process and convert the set of voice input into a text using a speech recognition algorithm, record user preference and interaction based on the set of commands received from the one or more users,

analyze a set of patterns based on the recorded user preference and interaction and provide assistance to the one or more users based on the analyzed set of patterns.

[0014] In an aspect, the system may include a human machine interface for real-time synchronization with one or more computing devices to enable control, update and feedback between the system and the one or more computing devices.

[0015] Various objects, features, aspects, and advantages of the inventive subject matter will become more apparent from the following detailed description of preferred embodiments, along with the accompanying drawing figures in which like numerals represent like components.

BRIEF DESCRIPTION OF DRAWINGS

[0016] The accompanying drawings are included to provide a further understanding of the present disclosure, and are incorporated in, and constitute a part of this specification. The drawings illustrate exemplary embodiments of the present disclosure, and together with the description, serve to explain the principles of the present disclosure.

[0017] In the figures, similar components, and/or features may have the same reference label. Further, various components of the same type may be distinguished by following the reference label with a second label that distinguishes among the similar components. If only the first reference label is used in the specification, the description is applicable to any one of the similar components having the same first reference label irrespective of the second reference label.

[0018] FIG. 1 illustrates an exemplary block diagram of the proposed robotic personal assistance system, in accordance with an embodiment of the present disclosure.

[0019] FIG. 2 illustrates an exemplary functional components of a control unit/processing unit, in accordance with an embodiment of the present disclosure

DETAILED DESCRIPTION

[0020] The following is a detailed description of embodiments of the disclosure depicted in the accompanying drawings. The embodiments are in such

detail as to clearly communicate the disclosure. However, the amount of detail offered is not intended to limit the anticipated variations of embodiments. On the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit, and scope of the present disclosure as defined by the appended claims.

[0021] In the following description, numerous specific details are set forth in order to provide a thorough understanding of embodiments of the present invention. It will be apparent to one skilled in the art that embodiments of the present invention may be practiced without some of these specific details. Embodiments of this disclosure relates generally to the network security and more specifically relates to a system and method for multi-component malware detection.

[0022] If the specification states a component or feature "may", "can", "could", or "might" be included or have a characteristic, that particular component or feature is not required to be included or have the characteristic.

[0023] As used in the description herein and throughout the claims that follow, the meaning of "a," "an," and "the" includes plural reference unless the context clearly dictates otherwise. Also, as used in the description herein, the meaning of "in" includes "in" and "on" unless the context clearly dictates otherwise.

[0024] According to an embodiment of the present disclosure a robotic personal assistance system is disclosed that includes a control unit and a processing unit. The control unit may receive a set of commands pertaining to movement through one or more computing devices from one or more users, send one or more instructions pertaining to movement to the system and detect one or more obstacles and adjust a path of movement of the system. The processing unit may receive a set of voice commands from the one or more users, capture a set of voice input from the set of voice commands through one or more microphones, process and convert the set of voice input into a text using a speech recognition algorithm, record user preference and interaction based on the set of commands received from the one or more users, analyze a set of patterns based on the recorded user preference and

interaction and provide assistance to the one or more users based on the analyzed set of patterns.

[0025] FIG. 1 illustrates an exemplary block diagram of the proposed robotic personal assistance system, in accordance with an embodiment of the present disclosure.

[0026] Referring to FIG.1, a robotic personal assistance system 100 (hereinafter referred to as system 100) is disclosed. The system 100 may include a control unit 102 to receive a set of commands pertaining to movement through one or more computing devices 106 from one or more users 108, send one or more instructions pertaining to movement to the system 100 and detect one or more obstacles and adjust a path of movement of the system 100. The system 100 may further include a processing unit 104 to receive a set of voice commands from the one or more users 108, capture a set of voice input from the set of voice commands through one or more microphones 110, process and convert the set of voice input into a text using a speech recognition algorithm, record user preference and interaction based on the set of commands received from the one or more users 108, analyze a set of patterns based on the recorded user preference and interaction and provide assistance to the one or more users 108 based on the analyzed set of patterns.

[0027] In an embodiment, the control unit 102 may be a microcontroller to execute the one or more instructions pertaining to movement and detect the one or more obstacles in a path.

[0028] In an embodiment, the processing unit 104 may be a Raspberry Pi for executing the instructions through one or more processing algorithms.

[0029] The control unit 102 may be suitable logic, circuitry, and/or interfaces that are operable to execute one or more instructions to perform pre-determined operations. The control unit 102 may be implemented using one or more processor technologies known in the art. Examples of the control unit 102 include but are not limited to, an x86 processor, a RISC processor, an ASIC processor, a CISC processor, or any other processor.

[0030] In an embodiment, the system 100 may include a human machine interface 112 for real-time synchronization with one or more computing devices 106 to enable control, update and feedback between the system 100 and the one or more computing devices 106.

[0031] In an exemplary embodiments, the human machine interface 112 may comprise a platform for communication with the devices/servers to read real-time data /write data in the control unit 102/processing unit 104. The human machine interface 112 allows user to feed inputs, to type/write/ upload the data, and other software and hardware interfaces, for example, interfaces for peripheral device(s), such as a keyboard, a mouse, an external memory, and a printer.

[0032] The one or more computing devices 106 may be connected to the control unit 102 and the processing unit 104 through a network 116. The computing devices 106 can be smartphone, tablet computer, personal digital assistant, laptop, portable media device, or the like. Moreover, the computing devices 106 can include any web client or application that facilitates communication and interaction.

[0033] Examples of the network 116 may include, but are not limited to, a Wireless Fidelity (Wi-Fi) network, a Wide Area Network (WAN), a Local Area Network (LAN), or a Metropolitan Area Network (MAN). Various devices in the system 100 can connect to the network in accordance with the various wired and wireless communication protocols such as Transmission Control Protocol and Internet Protocol (TCP/IP), User Datagram Protocol (UDP), and 2G, 3G, and 4G communication protocols.

[0034] In an embodiment, the one or more computing devices 106 may use a mobile application to allow the one or more users 108 to send movement instructions to the system 100.

[0035] In an embodiment, the control unit 104 may utilize one or more sensors 114 to detect obstacles in the path of movement and adjusts the path of movement to avoid collisions. In an exemplary embodiment, the one or more sensos 114 may be a proximity sensor, vibration sensor, that can include, but is not limited, to any or a combination of the one or more sensors known in the art.

[0036] In an embodiment, the assistance provided to the one or more users 108 may include personalized recommendations, reminders, and task executions.

[0037] In an embodiment, the system 100 can include the system can include a structure with one or more wheels 116 and a motor 118. In an exemplary embodiment, the motor 118 may be a direct current motor, induction motor, that can include, but is not limited, to any or a combination of the one or more types of motors known in the art.

[0038] In an embodiment, the control unit 100 can send the one or more instructions pertaining to movement to the one or more wheels 116 and a motor 118.

[0039] FIG. 2 illustrates exemplary functional components of a control unit/processing unit, in accordance with an embodiment of the present disclosure.

[0040] Referring to FIG. 2, exemplary functional components of proposed control unit/processing unit is disclosed. The control unit 102/processing unit 104 comprises one or more processors 202, a memory 204, and an interface(s) 206. The interface(s) 206 can comprise a variety of interfaces, for example, interfaces for data input and output devices referred to as I/O devices, storage devices, and the like. The interface(s) 206 facilitates communication with various devices coupled to the user device. The interface(s) 206 also provides a communication pathway for one or more components of the control unit 102/processing unit 104. Examples of such components comprise, but are not limited to, processing engine(s) and database.

[0041] In an embodiment, the processing engine(s) 208 are implemented as a combination of hardware and programming (for example, programmable instructions) to implement one or more functionalities of the processing engine(s) 208. In the examples described herein, such combinations of hardware and programming may be implemented in several different ways. For example, the programming for the processing engine(s) 208 are processor-executable instructions stored on a non-transitory machine-readable storage medium, and the hardware for the processing engine(s) comprises a processing resource (for example, one or more processors), to execute such instructions. In the present

examples, the machine-readable storage medium stores instructions that, when executed by the processing resource, implement the processing engine(s). In other examples, the processing engine(s) 208 is implemented by electronic circuitry. The processing engine 208 includes a database 210 data that is either stored or generated as a result of functionalities implemented by any of the components of the processing engine(s).

[0042] In an embodiment, the processing engine(s) 208 can include a receiver unit 212, an extraction unit 214, a conversion unit 216 and other units (s) 218, but not limited to the likes. The other unit(s) 218 implements functionalities that supplement applications or functions performed by the control unit 102/processing unit 104 or the processing engine(s) 208. The database 210 serves, amongst other things, as a repository for storing data processed, received, and generated by one or more of the engines.

[0043] In an embodiment, the receiver unit 212 can receive a set of commands pertaining to movement through one or more computing devices 106 from one or more users 108 and send one or more instructions pertaining to movement for the one or more wheels 116 and the motor 118 though the control unit 102 and receive a set of voice commands from the one or more users 108 through the processing unit 104.

[0044] In an embodiment, the extraction unit 214 can detect one or more obstacles and adjust a path of movement through the control unit 102 and capture a set of voice input from the set of voice commands through the processing unit 104.

[0045] In an embodiment, the operation unit 216 can process and convert the set of voice input into text using a speech recognition algorithm through the processing unit 104.

Exemplary Scenario

[0046] Example 1 – Voice interaction and information retrieval: User gives a command such as “Hey Brainy, what's the weather like today?”, the processing unit (Raspberry Pi) processes the voice command, converts speech to text, and sends the request to a weather application and then system replies “the weather today is sunny with a high of 28°C”.

[0047] Example 2 – Learning and Adaptation: The system learns the user's preferences, daily routines, and frequently used commands, user gives a command “Brainy, play my favorite playlist” and the system recognizes the user's voice and plays the personalized playlist without needing explicit commands.

[0048] Above embodiments disclose a robotic personal assistance system that provides voice interaction and physical mobility for enhanced user engagement. The system may include a control unit to receive a set of commands pertaining to movement, send one or more instructions pertaining to movement to the system and detect one or more obstacles and adjust a path of movement of the system. A processing unit may receive a set of voice commands from the one or more users, capture a set of voice input from the set of voice commands, process and convert the set of voice input into a text, record user preference and interaction based on the set of commands received from the one or more users, analyze a set of patterns based on the recorded user preference and interaction and provide assistance based on the analyzed set of patterns.

[0049] Moreover, in interpreting the specification, all terms should be interpreted in the broadest possible manner consistent with the context. In particular, the terms “comprises” and “comprising” should be interpreted as referring to elements, components, or steps in a non-exclusive manner, indicating that the referenced elements, components, or steps may be present, or utilized, or combined with other elements, components, or steps that are not expressly referenced. Where the specification claims refer to at least one of something selected from the group consisting of A, B, C….and N, the text should be interpreted as requiring only one element from the group, not A plus N, or B plus N, etc.

[0050] While the foregoing describes various embodiments of the invention, other and further embodiments of the invention may be devised without departing from the basic scope thereof. The scope of the invention is determined by the claims that follow. The invention is not limited to the described embodiments, versions or examples, which are comprised to enable a person having ordinary skill

in the art to make and use the invention when combined with information and knowledge available to those having ordinary skill in the art.

ADVANTAGES OF THE INVENTION

[0051] The present disclosure provides a robotic personal assistance system that seamlessly integrates voice interaction and physical mobility, allowing users to communicate with the robot using voice commands and also control its movement.

[0052] The present disclosure provides a robotic personal assistance system that detects obstacles in the path of movement and adjust the robot's path to avoid collisions enhances safety and reliability.

[0053] The present disclosure provides a robotic personal assistance system that provides personalized assistance, such as tailored recommendations, reminders, and task executions, based on individual user behavior and needs.

[0054] The present disclosure provides a robotic personal assistance system that use a speech recognition algorithm for voice-to-text conversion ensures accurate and efficient processing of voice commands.

[0055] The present disclosure provides a robotic personal assistance system with an interface for real-time synchronization with computing devices enables users to have immediate control, updates, and feedback.

We Claim:

1. A robotic personal assistance system (100), said system (100) comprising:

a control unit (102) to execute a set of instructions, where said set of instructions comprising:

receive a set of commands pertaining to movement through one or more computing devices (106) from one or more users (108);

send one or more instructions pertaining to movement to the system (100); and

detect one or more obstacles and adjust a path of movement of the system (100); and

a processing unit (104) to execute a set of instructions, wherein said set of instructions comprising:

receive a set of voice commands from the one or more users (108);

capture a set of voice input from the set of voice commands through one or more microphones (110);

process and convert the set of voice input into a text using a speech recognition algorithm;

record user preference and interaction based on the set of commands received from the one or more users (108);

analyze a set of patterns based on the recorded user preference and interaction; and

provide assistance to the one or more users (108) based on the analyzed set of patterns.

2. The system (100) as claimed in claim 1, wherein the control unit (102) is a microcontroller to execute the one or more instructions pertaining to movement and detect the one or more obstacles.

3. The system (100) as claimed in claim 1, wherein the processing unit (104) is a Raspberry Pi for executing the instructions through one or more processing algorithms.

4. The system (100) as claimed in claim 1, wherein the system (100) further comprises an interface (112) for real-time synchronization with one or more computing devices (106) to enable control, update and feedback between the system (100) and the one or more computing devices (106).
5. The system (100) as claimed in claim 1, wherein the one or more computing devices (106) use an application to allow the one or more users (108) to send movement instructions to the system (100).
6. The system (100) as claimed in claim 1, wherein the control unit (104) utilizes one or more sensors (114) to detect obstacles in the path of movement and adjusts the path of movement to avoid collisions.
7. The system (100) as claimed in claim 1, wherein the assistance provided to the one or more users (108) comprises personalized recommendations, reminders, and task executions.
8. The system (100) as claimed in claim 1, wherein the system (100) further comprises a structure with one or more wheels (116) and a motor (118).
9. The system (100) as claimed in claim 1, wherein the control unit (100) is further configured to send the one or more instructions pertaining to movement to the one or more wheels (116) and the motor (118).

For Panipat Institute of Engineering and Technology

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ABSTRACT

ROBOTIC PERSONAL ASSISTANCE SYSTEM

A robotic personal assistance system with a control unit and processing unit is disclosed. The control unit receives a set of commands pertaining to movement from one or more users, send one or more instructions pertaining to movement to the system and detect one or more obstacles and adjust a path of movement of the system. The processing unit receives a set of voice commands from the one or more users, capture a set of voice input from the set of voice commands through one or more microphones, process and convert the set of voice input into a text using a speech recognition algorithm, record user preference and interaction based on the set of commands received from the one or more users, analyze a set of patterns based on the recorded user preference and interaction and provide assistance to the one or more users based on the analyzed set of patterns.

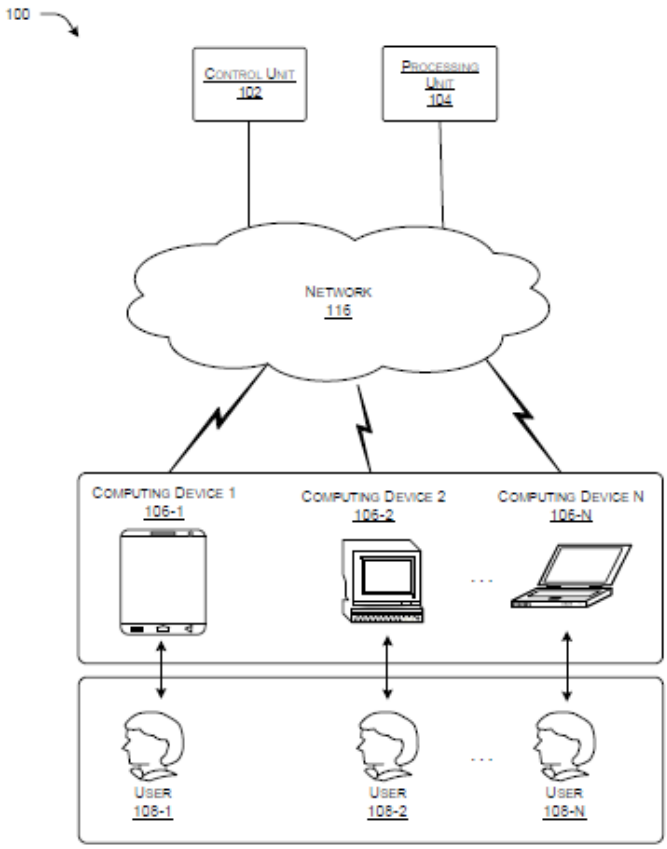

FIG. 1