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September 29, 2017

COMPOUND TASK REQUEST AND TRANSLATION

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Recommended Citation

Inc., Google, "COMPOUND TASK REQUEST AND TRANSLATION", Technical Disclosure Commons, (September 29, 2017)
http://www.tdcommons.org/dpubs_series/699



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COMPOUND TASK REQUEST AND TRANSLATION

ABSTRACT

An interactive assistant, referred to herein as “an interactive assistant,” “a virtual assistant,” or simply “an assistant,” may be configured to receive a compound task request. A compound task request is a single request to perform multiple (i.e., more than one) tasks. The compound task request may be in the form of a single spoken phrase. The interactive assistance may receive the spoken phrase, determine that the spoken phrase contains a request to perform multiple actions, and perform all of the actions requested by the spoken phrase. For example, the compound task request may be a request to translate a message (e.g., word, phrase, sentence, paragraph, document, etc.) from a source language to a target language and to send the translated message in the target language to a recipient.

DESCRIPTION

An interactive assistant, such as shown in the example of Figure 1 below, may be included in a computing system that is configured to interact with one or more users. The computing system may be, include, or otherwise be included in a mobile device (e.g., smart phone, tablet computer, laptop computer, computerized watch, computerized eyewear, computerized gloves), a personal computer, a smart television, a personal digital assistant, a portable gaming system, a media player, a mobile television platform, an automobile navigation and/or entertainment system, a vehicle (e.g., automobile, aircraft) and/or cockpit display, or any other type of wearable, non-wearable, mobile, or non-mobile computing device, and the computing system may or may not include a display device. In some cases, the interactive

assistant may be a voice-assistant that receives audible user commands, processes the commands based on speech recognition operations, and performs corresponding actions, such as providing audible responses to user queries and/or performing certain actions. The interactive assistant may provide or utilize a user interface with which a user can communicate to cause the assistant to output useful information, respond to a user's queries, or otherwise perform certain operations to help the user complete a variety of real-world or virtual tasks.

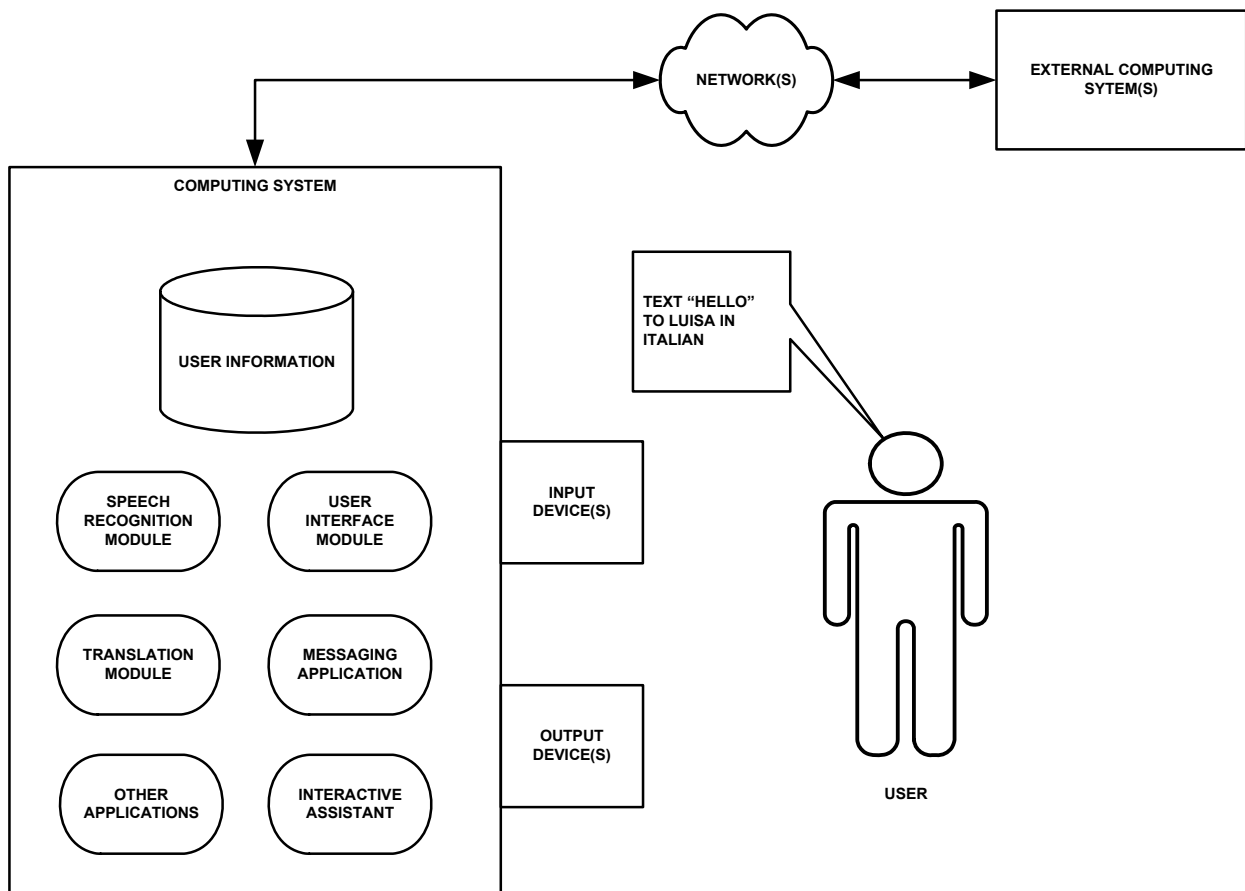


Figure 1

Figure 1 above illustrates an example of an interactive assistant that is configured to receive requests from the user of the interactive assistant to perform multiple actions. In particular, the interactive assistant is configured to be able to receive a single request to perform multiple actions, and to perform the multiple actions included in the single request. Such a request to perform multiple actions is referred to throughout this document as a compound task request.

The computing system that includes the interactive assistant may have or otherwise be communicatively coupled to one or more input devices and one or more output devices. For instance, the input devices may include one or more microphones, a presence-sensitive input device (e.g., a touch-sensitive screen), a mouse, a keyboard, a voice responsive system, a camera, or any other type of device for detecting input from a human or machine. In some cases, the input device may one or more location sensors (GPS components, Wi-Fi components, cellular components), one or more temperature sensors, one or more movement sensors (e.g., accelerometers, gyroscopes), one or more pressure sensors (e.g., barometer), one or more ambient light sensors, and/or one or more other sensors (e.g., camera, infrared proximity sensor, hygrometer, and the like). Other sensors may include a heart rate sensor, magnetometer, glucose sensor, hygrometer sensor, olfactory sensor, compass sensor, step counter sensor, to name a few other non-limiting examples.

The computing system may also include or be communicatively coupled to one or more output devices, such as one or more speakers or display screens, including a presence-sensitive screen (e.g., touchscreen), or any other type of device for generating output to a human or machine. In some cases, the input devices and/or output devices may include one or more other

type of wearable, non-wearable, mobile, or non-mobile computing devices that are also used by the user. One or more of the input and/or output devices may be external to and communicatively coupled (e.g., via a wired or wireless connection) with the computing system.

The computing system may also include a user interface module that is configured to manage inputs received by the interactive assistant as users interact with the computing system, and the user interface module may be configured to receive additional instructions from applications, services, platforms, or other modules of the interactive assistant that process user input. The user interface module may also be configured to process output that is provided to users, and may be coupled to the input device(s) and output device(s) of the interactive assistant. The computing system may also include a speech recognition module, which may interface with the user interface module and/or the interactive assistant. When a user provides audible input to the interactive assistant (e.g., via commands, questions, queries, and requests), the interactive assistant may use the speech recognition module to process such audible input.

The interactive assistant may receive a compound task request from the user. A compound task request is a request for the interactive assistant to perform two or more tasks. One example of a compound task request is a request to both perform of a translation of a message from a source language to a target language, and to send the translated message to another user. For example, the user may speak the phrase “text ‘hello’ to Louisa in Italian.” The phrase spoken by the user is a compound task request because it requests the interactive assistant to both translate the word “hello” to Italian and to send the translated word as a text message to Louisa. A microphone of the computing system may receive the user’s request to perform

compound tasks. The speech recognition module of the computing system may perform speech recognition on the user's request and may provide the user's request to the interactive assistant.

The interactive assistant may determine the tasks to be performed that are contained in a single request from the user. For example, the interactive assistant may recognize that the phrase "text 'hello' to Louisa in Italian" contains multiple actions to be performed by the interactive assistant. In this example, the interactive assistant may determine that the request contains two related tasks: 1) translate the word "hello" from English to Italian and 2) text the translated word to Louisa. After determining the different tasks included in the compound task request, the interactive assistant may perform each of the requested tasks.

The interactive assistant may use an application, such as a translation module, to perform the translation. The interactive assistant may also utilize a user information data store to look up the name Louisa in the user's contact list. The contact information for Louisa in the user's contact list may include one or more ways to contact Louisa, such as phone numbers, messaging application usernames, social media usernames, e-mail addresses, and the like. The interactive assistant may select one of the ways to contact Louisa based on the request. For example, because the request is for the interactive assistant to "text," the interactive assistant may select a phone number or a messaging application username for Louisa as the recipient.

The interactive assistant may coordinate the translation module, the user information data store, and the messaging application to perform the compound task request. For example, the interactive assistant may retrieve a messaging application username for Louisa and may direct the messaging application to compose a new message with the intended recipient being the retrieved messaging application username. The interactive assistant may also direct the

translation module to translate the word “hello” to Italian and may direct the translation module to output the translated word to the messaging application as the body of the new message. The interactive assistant may then fulfill the compound task request by directing the messaging application to send the message.

By supporting compound task requests, the interactive assistant may increase the ease of use of the interactive assistant by enabling the user to send a single request to the interactive assistant to perform multiple tasks, as opposed to requiring the user to break up a compound task request into multiple separate requests to perform tasks. The above examples are just some use cases for the computing system and interactive assistant shown in Figure 1, and it should be understood that the computing system and interactive assistant shown in Figure 1 has many other applications and use cases. For example, compound task requests are not necessarily limited to translation and messaging, but may include requests for the interactive assistant to perform any suitable combinations of tasks.