

Virtual Assistant based on Gestures

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Abstract-

The purpose of this paper to provide the user with the hypothesis that if virtual assistant such as Cortona , Siri and Alexa were to use gestures what would be the face of virtual technology. Gestures used by the assistant could make the technology more familiar with the user. Gestures

A dialogue system, is a computer system intended to converse with human. Dialogue systems employed one or more of text, speech, graphics, haptics, gestures, and other modes for communication on both the input and output channel. People often make kind gestures, gestures which might reasonably be described as both thoughtful and creative. This ability of ours to demonstrate thoughtfulness towards others (loved ones, acquaintances, colleagues and Computational creativity deals with the experimentation with the goal of finding innovative ideas in the fields of music, engineering, cuisine, art, etc. In this field various Artificial intelligence techniques are used to produce artistic artifacts and performances such as narratives, music, visual art, thoughtful gestures, etc. In

would be embedded in the dialogue systems with the help of Artificial Intelligence(AI) , with currently growing market of dialogue systems, the gesture technology will help in increasing the human-machine interaction.

Introduction

customers, even near strangers) leads to some of the most valued instances of human social behavior. If virtual assistant were to demonstrate above stated gesture it's accuracy is uncertain. We, surely don't want the virtual assistant to play ukulele but it should be capable of expressing the intention to play it.

Computational Gestures

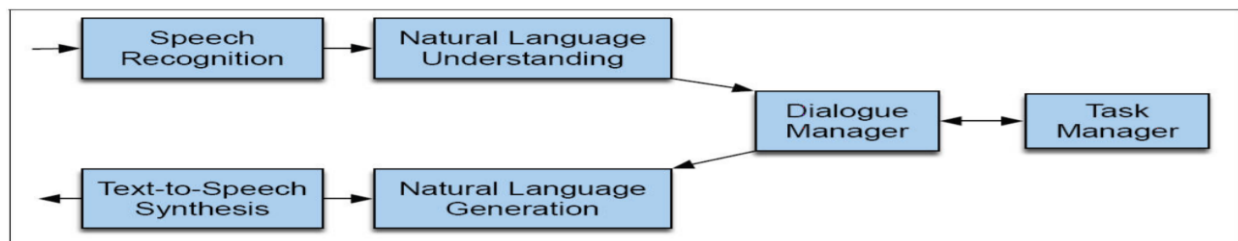
computational creativity we can call thoughtful gestures as product of everyday creativity. We can use four criteria to demonstrate generation of thoughtful gestures : novelty, value, unexpectedness (Boden 1990)[1] and intentionality (Ventura 2016)[2].

Novelty

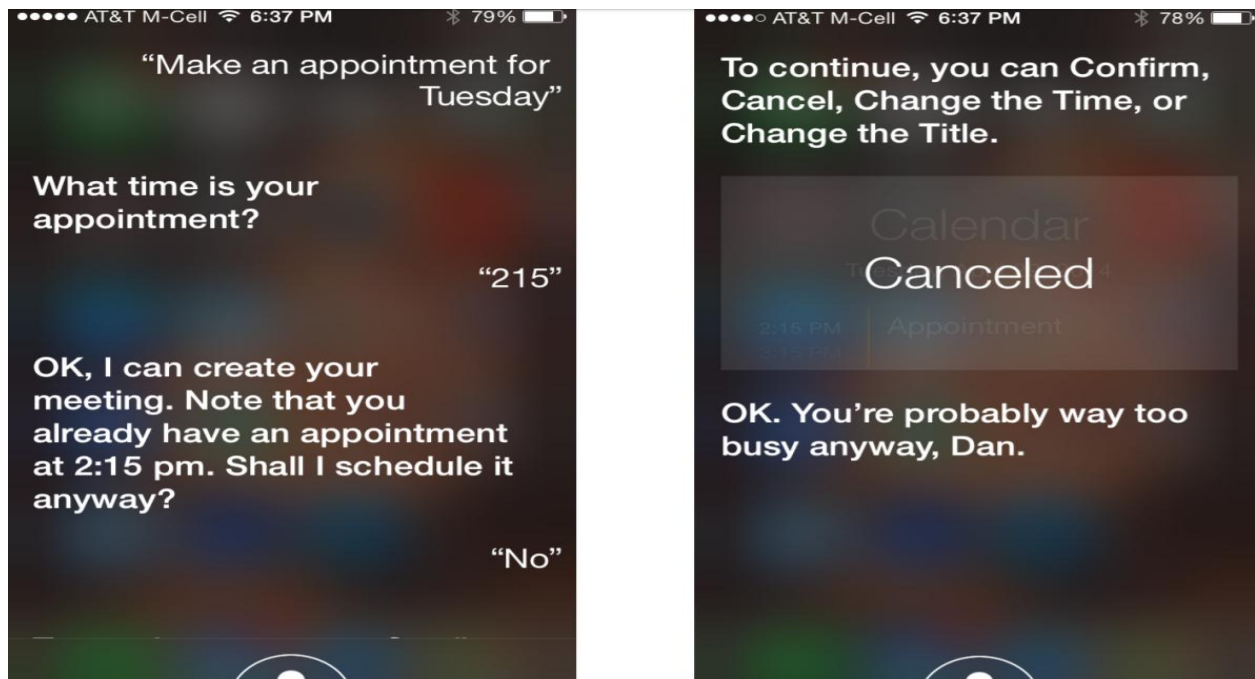
In order to achieve novelty, virtual assistant that compete in our challenge wouldn't be required to conduct generative processes, i.e., to create something new, such as a book, from scratch. It's true that such an act would be very compelling (such as writing a sonnet inspired by a recipient) but

would also be very demanding. Even selecting particular gesture out of several available ones can determine creativity if the assistant comes up with a novel and interesting connection between the selected gesture and the recipient (For example: "I chose this book for you because the main character is similar to you in a way....").

Dialogue System Architecture



Virtual Assistant Dialogue System



Value

The value of a gesture is contained within the thoughtfulness. Should follow the below provided criteria for being thoughtful

- Be likely, based on the information available, should have a positive socio-emotional effect on the recipient.
- Be rooted in the information provided by the recipient, and appropriately justified.

Therefore, the virtual assistant should not demonstrate any misunderstanding or any wilful disregards of the personal information provided by the recipient during the conversation (For example: suggesting a cookbook to someone who has shown aversion for cooking).

Unexpectedness

As virtual assistant, carries on dialogue with humans, it should plan what it says next very carefully. Both, the planned thoughtful gesture and the fact that a gesture is planned must be kept very surprising. The virtual assistant should plan its gestures in support of these conflicting goals:

Variants of Challenge

- Acquiring relevant information for planning a thoughtful gesture (“Is the recipient a keen reader?”, “Does he already own the book I am going to suggest him?”, “Are they allergic to peanuts?”)
- Maintaining unexpectedness by not revealing its thoughtful intentions through ill-planned questions or remark.

To engage in this “Surprise – Preserving dialogue”[3] virtual assistants will likely be able to reason about the beliefs of the person they are conversing with and how the assistant’s own utterances can affect those beliefs.

Intentionality

Intentionality means that the virtual assistant is being purposive or deliberative, meaning that the output of the system is result of the system having goals and objectives – as explained by Ventura(2016) (For example: Your virtual assistant have sent you chocolates since you have mentioned earlier that you have a sweet tooth).

Suppose we create a virtual assistant that could participate in thoughtful gesture generation. The assistant would have to engage in a dialogue with a human and then decide to do something nice for the human based on the information exchanged during the dialogue. Therefore, to achieve this the assistant would first need to be an accomplished conversationalist as well as a thoughtful and creative generator of nice gestures. But this is again could be possible only hypothetically since, full conversational skills are still a very difficult problem for virtual assistants. This paper provides a of brief description about the thoughtfulness of the virtual assistants and hoe to achieve that thoughtfulness. The reader gets the idea of how would the world of dialogue system change if virtual assistants were to demonstrate thoughtful gestures. In order to do so we would have to use the computational creativity techniques in Artificial Intelligence (AI). In the end, we use various criteria to evaluate virtual assistant's thoughtfulness, such

So we would be compounding difficult problems and decreasing the likelihood of promising short-term results.

In a simpler variant, instead of conversing with the person , a rookie thoughtful virtual assistant could simply “read” a short, first-person story about the person in question. Then it could be asked to select an appropriate gesture from a multiple-choice list, rather than to form a gesture description.

Conclusion

as, novelty, value, intentionality , etc. which defines that the virtual assistant is capable of maintaining the element of surprise while planning a thoughtful gesture for the recipient.

References

- Boden [1990]
- Venture[2016]
- <https://www.capitalone.com/tech/machine-learning/thoughtful-gesture-generation-challenge-for-virtual-ai-assistants/>