

Generation of co-speech gestures using gesture unit and type based on morphemic analysis of robot utterances

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Overview

- **Co-Speech Gesture**

- ✓ To highlight and emphasize the visual characteristics of stories or explanations during a dialogue or talk

- **Our goal**

- ✓ Generate appropriate co-speech gestures for a robot that are well matched with the spoken dialogue of a robot

- **Issues:**

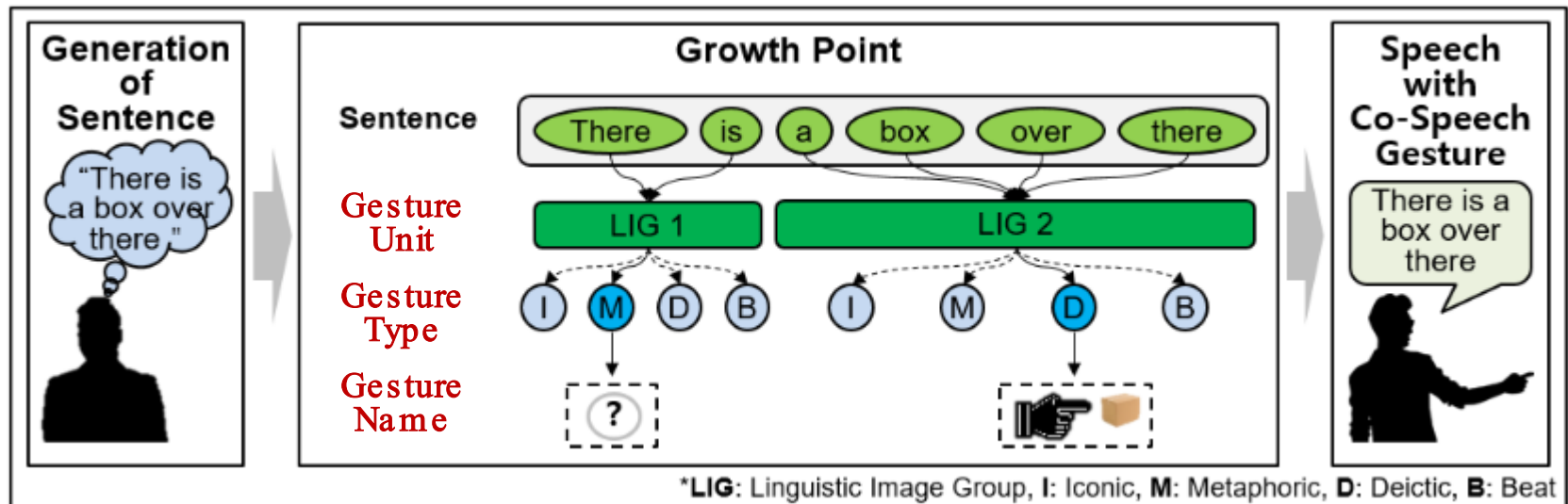
- ✓ Determine start and end timing of gestures
- ✓ Generate appropriate gestures for each execution time

Example,

<i>Speech:</i>	The	town	shriveled	and	dried	up	along	with	the	lake
<i>(Case 1) Gesture:</i>			Gesture A							
<i>(Case 2) Gesture:</i>			Gesture B							

Concept of our method

- **Employed of conceptual mechanism of human gestures (McNeill, 2008)**
 - ✓ Human gestures are made by "Growth Point"
 - Means a linguistic image group inferred a group of words in a sentence
 - ✓ Human gestures categorized into 4 types such as Iconic, Metaphoric, Deictic, and Beat
 - Iconic: expresses a concrete image (e.g., shape of an object)
 - Metaphoric: indicates an abstract state (e.g., feeling, state)
 - Deictic: means pointing gestures
 - Beat: contains repeated gestures without meaning



* D. McNeill, "Gesture and thought," University of Chicago Press, 2008.

Result

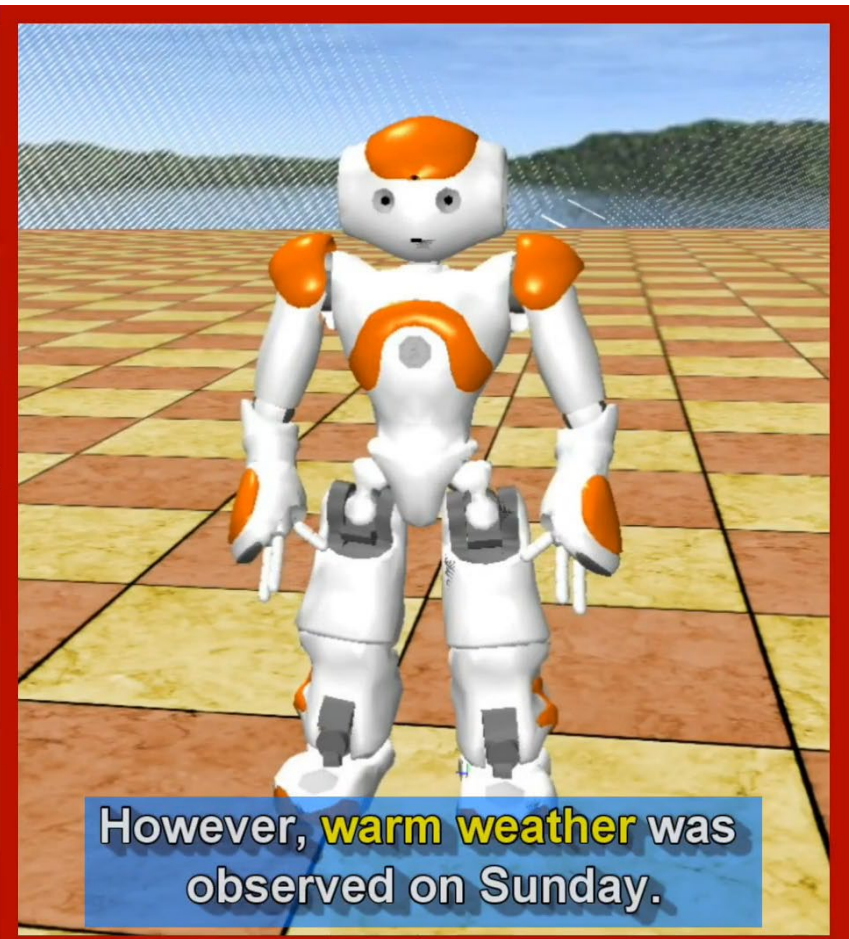
- Accuracy of determining expression unit and predicting gesture types: 83%
- Generate gestures even if a new sentence is inputted

Process

Input:	그러나 일요일은 따뜻한 날씨가 관측되었습니다. (However, warm weather was observed on Sunday.)			
Gesture Unit	그러나 (However)	일요일은 (on Sunday)	따뜻한 날씨가 (warm weather)	관측되었습니다. (was observed)
Gesture Type	Iconic	Iconic	Iconic	Metaphoric
Gesture Name	EMPHASIS	TIME	GOOD	EXPECT

Database

Morpheme	Gesture Name	Morpheme	Gesture Name
오늘(Today)	TIME	중요(Importance)	EMPHASIS
경보(Warning)	BAD	기대(Anticipation)	EXPECT
맑음(Clean)	GOOD	마음(Heart)	HEART
곡식(Crops)	FOOD	사랑(Love)	LOVE



Result

- Accuracy of determining expression unit and predicting gesture types: 83%
- Can generate gestures even if a new sentence is inputted

