P4

Constructing a Japanese Sign Language Multi-Dimensional Database

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ABSTRACT

Sign language is used by deaf people, and is a natural interactive language different from and independent of oral language. Research on oral data of the Japanese language has vastly developed in the fields of engineering and linguistics since the National Institute of Informatics established the Speech Resources Consortium. Research on sign language in the fields of engineering and linguistics, however, has lagged. One of the reasons is lack of a database available to any researcher.

This research thus plans to discuss a methodology to construct a versatile database of JSL. We are aiming at constructing an interdisciplinary database which can be used by a lot of researchers in the fields of engineering, cognitive science, linguistics and many others. This project includes four tasks to establish a database which is available to researchers in various academic fields.

First, we will collect JSL data appropriate for linguistic and engineering use. This task involves consideration of types of signs, types of sentences, and selection of informants.

Second, we will discuss the best source format, spatio-temporal resolution, format of data files, and an appropriate storing method for academic fields, such as linguistics and engineering. We are now considering the introduction of 3-D motion data, multi-view images, and depth images. As for 3D motion data, we will use an optical motion-capture technology which has world-leading precision.

Third, we will need to think about ways to unite various types of data and make the database available for research.

Finally, among others, we need to develop a new annotation system which can organically correlate three different types of data with one another to make the database most effective.

Technical specifications of 2017 are shown in table 1.

Table 1: Technical Specifications

Media Category	**contents**
MoCap	
Camera type	VICON T160(V16)
Frame rate	120fps
Resolution	4,704×3,456 pixels
Numbers	42
Number of retro-reflective markers	*112*
Video	
Camera type	SONY PWX-X200
Resolution	1920×1080 pixels
Format	MPEG-4 AVC/H.264
Frame rate	60fps
Numbers	3
Super slow video	
Camera type	SONY PWX-Z90
Resolution	1920×1080 pixels
Format	XAVC
Frame rate	120fps
Numbers	1
Depth Camera	
Camera type	Kinect2
Resolution	512×424 dots
Depth Measurement range	0.5～4.5m
Horizontal Field of View	70 degrees
Vertical Field View	60 degrees
Frame rate	30fps
Numbers	1