Title of Project： Research into Constructing a Japanese Sign Language Multi-Dimensional Database

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【Purpose and Background of the Research】

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 since in the fields of linguistics and engineering. National Institute of Informatics established Speech Resources Consortium whereas research on sign language in the fields of engineering and linguistics has been behind. One of the reasons is lack of a database available to any researcher.

This research plans to discuss a methodology to construct a versatile database of JSL, and then construct such a database. 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.

【Research Methods】

This project includes four tasks to establish a database which is available to researchers in various academic fields.

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

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

Third, we will need to unit various types of data and make the database available for research. We will then need to consider how to organize these data when constructing the database.

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 the most effective. Figure 1 shows　an annotation support system which we are developing to deal with the versatile database.
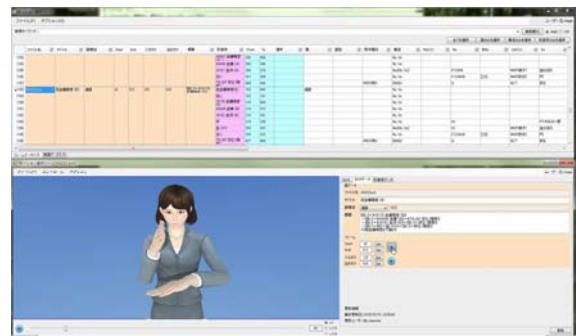

Figure 1 Annotation support system for Database

【Expected Research Achievements and
　Scientific Significance】

This research aims at proposing and constructing a JSL multidimensional database which involves various spatio-temporal resolutions and input media of different qualities. After completing the database, we will register it in Speech Resources Consortium of National Institute of Informatics, making it available to researchers in many different fields who want JSL data. This must contribute the development of sign language research in Japan as well as find new insights and methodologies in the field, these contributions will be the ones which cannot be overestimated

【Publications Relevant to the Project】

・K. Watanabe, Y. Nagashima, IEICE Trans. , Vol.J100-D, No.3, pp.298-309, 2017.
・K. Watanabe, Y. Nagashima, IEICE Trans. , Vol. J99-D, No.1, pp.76-89, 2016.
・Y. Nagashima, et al., Lecture Notes in Computer Science 618, Springer, pp.124-127, 2016.

【Term of Project】 FY2017-2020

【Budget Allocation】 109,200 Thousand Yen

【Homepage Address and Other Contact
　Information】
　　http://www.ns.kogakuin.ac.jp/~wwc1015/