Abstract

In this paper, the task of sign language recognition at sentence level is addressed. The idea of Sign Energy Image (SEI) and a method of extracting Fuzzy-Gaussian Local Binary Pattern (FzGLBP) features from SEI to characterize the sign are explored. The suitability of interval valued type symbolic data for efficient representation of signs in the knowledgebase is studied. A Chi-square proximity measure is used to establish matching between reference and test signs. A simple nearest neighbor classification technique is used for recognizing signs. Extensive experiments are conducted to study the efficacy of the proposed system. A data base of signs called UoM-ISL is created for experimental analysis.

References

4. O. Aran, T. Burger, A. Caplier, L. Akarun, A belief-based sequential fusion approach for
5. Aryanie, D. and Heryadi, Y. American sign language-based finger-spelling recognition
using k-Nearest Neighbors classifier. 3rd International Conference on Information and
Communication Technology (ICoICT ), 2015.
Language Recognition in User Dependent Mode. Journal of Intelligent Learning Systems and
7. B. Bauer, H. Hienz, Relevant features for video-based continuous sign language
recognition, in: FG00 Proceedings of the Fourth IEEE International Conference on Automatic
9. R. Bowden, D. Windridge, T. Kadir, A. Zisserman, M. Brady, A linguistic feature vector for
the visual interpretation of sign language, in: Proceedings of the Eighth European Conference
11. C-C. Chang, J.J. Chen, W.K. Tai, C.C. Han, New approach for static gesture
12. H. Cooper, B. Holt, R. Bowden, Sign language recognition, Chapter in Visual Analysis of
13. Daniel Kelly, John McDonald., A person independent system for recognition of hand
with support vector machines and hidden conditional random fields: going from fingerspelling to
natural articulated words. MLDM'13 Proceedings of the 9th international conference on Machine
Learning and Data Mining in Pattern Recognition. Pages 84-98,2013.
15. Djamila ahmani and Slimane Larabi.,User-independent system for sign language finger
spelling recognition Journal of Visual Communication and Image Representation Vol 25, Iss
processing techniques for sign language recognition and translation, Technol. Disability
20,2008.
17. Ebling, S., Wolfe, R., Schneppe, J., Baowidan, S., McDonald, J., Moncrief, R., ... & Tissi,
K. Synthesizing the finger alphabet of Swiss German Sign Language and evaluating the
comprehensibility of the resulting animations. In 6th Workshop on Speech and Language
Processing for Assistive Technologies (SLPAT) (p. 10), September, 2015.
20. Gasparini, Francesca, and Raimondo Schettini. "Skin segmentation using multiple
thresholding.” Electronic Imaging 2006. International Society for Optics and Photonics, 2006.
38. Sylvie C.W. Ong and Surendra Ranganath. Automatic Sign Language Analysis: A Survey and the Future beyond Lexical Meaning. IEEE transactions on pattern analysis and
machine intelligence, vol. 27, no. 6, june 2005.


Index Terms

Computer Science Pattern Recognition

Keywords

Fuzzy Gaussian LBP, Interval valued features, Sign Energy Image, Sign language, Video sequence