

EMOTION RECOGNITION OF FINGER BRAILLE

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ABSTRACT. *Finger Braille is one of the tactual communication media of deafblind people. Deafblind people who are skilled in Finger Braille can catch up with speech conversation and express various emotions. The objective of this study is development of a Finger Braille supporting device which assists not only verbal communication but also non-verbal (emotional) communication between deafblind people and non-disabled people. In this paper, to develop emotion recognition system, we analyzed features of emotional expression (neutral, joy, sadness and anger) and derived an algorithm of emotion recognition using accelerometers worn by receiver. The selected features were the duration of dotting and amplitude of acceleration by dotting. The classifier was canonical discriminant analysis (CDA). A sentence was classified into the emotion for which the mean of posterior probabilities of dotting in the sentence was highest. The results of the evaluation experiment showed that the algorithm of emotion recognition was practicable and independent of sentences.*

Keywords: Finger Braille, Deafblind, Emotion recognition, Communication aid

1. Introduction. Recent surveys (The Deafblind Association of Japan, 2006) estimate that there are 16,354 deafblind people in Japan. Deafblind people use many different communication media according to the age of onset of deafness and blindness and the available resources. “*Yubi-Tenji*” (Finger Braille) is one of the tactual communication media utilized by deafblind individuals (see Figure 1). In two-handed Finger Braille, the index finger, middle finger and ring finger of both hands function like the keys of a Braille typewriter. A sender dots Braille code on the fingers of a receiver as if typing on a Braille typewriter. The receiver is assumed to recognize the Braille code. In one-handed Finger Braille, the sender dots the left column of Braille code on the distal interphalangeal (DIP) joints of the three fingers of the receiver, and then the sender dots the right column of Braille code on the proximal interphalangeal (PIP) joints. Deafblind people who are skilled in Finger Braille can catch up with speech conversation and express various emotions, because of the prosody (intonation) of Finger Braille [1]. Because there is such