

# Achieving Socio-affective Communication Support through Behavioral and Physiological Signal Processing

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Abstract

Socio-affective communication is associated with producing a good relationship. In this thesis, we work toward achieving socio-affective communication support. First, we investigate the relationship between social performance and behavioral signals. Identifying behavioral signals that affect social performance would help people realize the required skills. There are only English and French versions of the scale that have been used to measure social performance. We developed and evaluated a Japanese version of the scale. Then, we analyzed social performance measured by the scale and behavioral signals. We show the characteristics of behavioral signals that are related to the achievement of high social performance. Second, we propose a music generation system to induce appropriate emotions. Emotions are one of the factors that influence behavioral signals. People should manage their emotions to make good socio-affective communication. Music is often used for emotion induction. We try to use music to achieve appropriate emotions for encouraging socio-affective communication. However, the emotions felt when listening to music vary from person to person, and customized music is required. Therefore, we develop a system that predicts emotions using an electroencephalogram (EEG) and generates music based on the predicted emotions to induce a specific emotion. To predict emotions, we investigated the structure of emotion prediction models and how to train them using a small amount of EEG data. We made a system that generates adaptive music based on emotions predicted by EEG and evaluated the performance for emotion induction.