Comparing Automated Pain Classifiers with Human Performance

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Facial expressions play an important role in the communication process. They usually support the spoken words of communication partners. We investigated the question whether facial expressions on their own are sufficient to recognize the feelings of other persons. If this is the case, the identification of certain emotions could be automatized. We compare the accuracies of automated classifiers with human rater performance. Our work is divided in two parts. The first part describes an empirical study that examines how well subjects estimate the shown emotions of other people. Subjects (n=60) are required to rate whether the person shown in an image are in pain, in disgust or in a neutral state.

The second part covers the application of machine learning algorithms (Support Vector Machines and Decision Trees) to the problem of classifying facial expressions. Only two categories of expressions are considered, namely pain and disgust, in order to reduce complexity. The selection of relevant features is based on psychological considerations and dimensionality reduction mechanisms. We expect that machines will outperform human raters.