Towards a model for predicting social distance in spontaneous conversation

Catharine Oertel & Nick Campbell

Trinity College Dublin

{e-mail: oertelgc@tcd.ie, nick@tcd.ie}

This study presents preliminary results on the development of a method to automatically detect and measure the degree of social distance between any two people in a conversation. To this end we use a statistical model developed for involvement in combination with movement detection and other such discourse cues.

People do not participate in the conversation to the same degree all the time. The group might break down into subgroups of people, who might engage in a local dyadic conversation for some part of the conversation. They might become closer together during certain parts of the conversation and then break apart again.

Quantifying the degree of involvement of a group of participants in a conversation is a task which humans accomplish every day, but it is something that, as of yet, machines are unable to do. We adopt Antil's definition of involvement as "the level of perceived personal importance and/or interest evoked by a stimulus (or stimuli) within a specific situation" [1] and consider involvement to describe the relations within a group of people rather than the state of an individual. We estimate a measure of "social distance" between each pair of people in a conversation.

For the prediction of the degree of involvement in a multi-party conversation we first investigated the correlation between visual cues (gaze and blinking rate) and involvement as measured by a human annotator, and then tested the suitability of prosodic cues (acoustic model) as well as gaze and blinking (visual model) by using a support vector machine. We tested [2] whether the fusion of the acoustic and the visual models improves the prediction and showed that the model is able to predict three classes of involvement with a 30% improvement over baseline (accuracy =0.68).

References

[1] Antil, J.H.: Conceptualization and Operationalization of Involvement. *Advances in Consumer Research*. 11(1), 203–209 (1984).

[2] Oertel, C., Scherer, S. & Campbell, N. (accepted). On the use of multimodal cues for the prediction of degrees of involvement in spontaneous conversation. *Interspeech 2011*, Florence, Italy.