

# Enculturating Conversational Interfaces by Socio-cultural Aspects of Communication

**Matthias Rehm**  
**Elisabeth André**  
Multimedia Concepts and  
Applications, University of  
Augsburg, Germany  
{rehm,andre}@informatik.uni-  
augsburg.de

**Yukiko Nakano**  
Ubiquitous and Universal  
Information Environment  
Tokyo University of  
Agriculture and  
Technology, Japan  
nakano@cc.tuat.ac.jp

**Toyoaki Nishida**  
Graduate School of  
Informatics  
Kyoto University, Japan  
nishida@i.kyoto-u.ac.jp

## Author Keywords

cultural computing, embodied conversational agents, HCI

## ACM Classification Keywords

H.1.2 User/Machine Systems; H.5.1 Multimedia Information Systems; H.5.2 User Interfaces

## INTRODUCTION

The workshop is centered around three main research challenges:

1. Computationally viable models of cultural aspects of conversations: Cultural norms and values penetrate all our communications and interactions by giving us heuristics how to behave and how to interpret the verbal and nonverbal behavior of others. To make such a notion like culture available for computation, we need a very specific theory of culture that takes its effects on communication and interaction into account.
2. Reliable empirical data on cultural/cross-cultural interaction: To realize technical systems that take cultural influences on behavior into account, precise data analysis on how this influence manifests itself is necessary. In the literature, this information is often given in very general forms without references to the precise data on which the observations are based.
3. Enculturating conversational interfaces: Having identified cultural influences on verbal/nonverbal communicative behaviors, it remains to be shown how this can be applied to the development of human-computer interfaces, for instance in an interface reflecting cultural norms and values of communication.

## COMPUTATIONALLY VIABLE MODELS OF CULTURE

The most cited theoretical approach to culture in HCI research is Hofstede's dimensional model [1]. Nazir et al. describe how the relation between Hofstede's cultural dimensions, personality traits, and emotions could be formalized in an integrated model. To this end they rely on the PSI model of emotion which is enriched with the Big Five model of personality [2] and Hofstede's dimensions. Hofstede's theory is grounded in empirical data from a questionnaire developed for a business context. Stewart and Charkraborty pose the important question if this approach is generalizable and can

be adopted to HCI research. Prototypically suited for adapting to a user's cultural background are embodied conversational agents. Ruttkay concentrates on the question where in the development process of such agents cultural influences have to be considered and comes up with some surprising results.

## EMPIRICAL DATA ON (CROSS-)CULTURAL INTERACTION

Empirical data on culture-specific behavior patterns is scattered through the literature and often focuses on very specific aspects of interaction. Bee and André address this problem by providing a comprehensive literature review for culture-specific gaze behavior, thus providing a more general picture. Endrass et al. as well as Rehm et al. present analyses of different aspects of culture-specific human interaction relying on the CUBE-G corpus of multimodal behavior in prototypical situations. Rehm et al. give an overview on how the corpus was created and present some preliminary results on differences in gestural expressivity as well as posture shifts in the German and the Japanese culture. Endrass et al. focus on the important features of silence in dialogues and convincingly show how the use of silence differs between the German and the Japanese culture. Koda emphasizes that not only behavior but also perception is based on cultural preferences. She presents a series of cross-cultural evaluations of avatar facial expressions that illustrate this effect.

## ENCULTURATING INTERFACES

The technical question on how to actually enculturate interfaces was tackled by three papers. Bergstrom and Karahalios investigate an interface to capture cultural influences in topic summarization. Miller focuses on the way politeness is realized in different cultures and gives an overview of systems developed to incorporate these differences to ensure successful human-machine interactions. Huang et al. at last present a complete architecture for an information presentation system that can be tailored to the user's cultural background and discuss where cultural influences manifest themselves in such an architecture.

## REFERENCES

1. G. Hofstede. *Cultures and Organisations*. Profile Books, 1991.
2. R. R. McCrae and O. P. John. An introduction to the five factor model and its applications. *Journal of Personality*, (60):175–215, 1992.