Chapter XIV
GlobalMind:
Automated Analysis of Cultural Contexts with Multicultural Common-Sense Computing

Hyemin Chung
The Media Laboratory, MIT, USA

Henry Lieberman
The Media Laboratory, MIT, USA

ABSTRACT

The need for more effective communication between people of different countries has increased as travel and communications bring more of the world's people together. Communication is often difficult because of both language differences and cultural differences. Attempts to bridge these differences include many attempts to perform machine translation or provide language resources such as dictionaries or phrase books; however, many problems related to cultural and conceptual differences still remain. Automated mechanisms to analyze cultural similarities and differences might be used to improve traditional machine translators and as aids to cross-cultural communication. This article presents an approach to automatically compute cultural differences by comparing databases of common-sense knowledge in different languages and cultures. Global-Mind provides an interface for acquiring databases of common-sense knowledge from users who speak different languages. It implements inference modules to compute the cultural similarities and differences between these databases. In this article, the design of the GlobalMind databases, the implementation of its inference modules, as well as an evaluation of GlobalMind are described.

INTRODUCTION

The number and scale of multinational organizations are increasing and the interactions among countries are more frequent. While these changes have increased the need for effective cross-cultural communication, it remains difficult because of cultural and language differences.

GlobalMind is an attempt to automate the analysis of cultural differences. We describe how the multicultural common-sense database can improve cross-cultural communication and how the automated inference modules can analyze the cultural differences based on the database.

Difficulties in Cross-Cultural Communication

In cross-cultural interactions, people should consider and understand each other's cultural background in order to have successful interactions (Adler & Graham 1989, Herring, 1990). Expected behaviors, signals, and contexts of communication differ by the cultural backgrounds of the speakers. Even small misunderstandings that arise from cultural differences can cause the failure of entire negotiations (Sawyer & Guetzkow, 1965). Condon (1974) emphasized the importance of understanding cultural differences in cross-cultural communication because misunderstandings from cultural differences could not easily be deciphered and corrected. Consideration of cultural contexts in cross-cultural communication is essential to successful interactions.

Many linguistic problems also have their roots in cross-cultural problems. Language differences have been researched and studied by many people, from linguistic researchers to elementary-school students. Efforts to solve language difference problems with automated mechanisms have resulted in many different approaches to machine translation (Jurasky & Martin, 2000). While the research community has solved many aspects of the linguistic problem, many non-literal transla-

tions cannot be properly made without consideration of cultural differences.

There is discussion as to whether an accurate translation between two different cultures is even possible (Scheff, 1987). It remains difficult to make an accurate translation between two cultures; in many cases, a vocabulary or an idiom in one culture is not found in another culture. Even when a similar vocabulary exists, it may not reflect the same experience when the cultural backgrounds are different (Sechrest, Fay, & Zaidi, 1972). Munter (1993) observed that English does not have a word for the Korean word "KI BUN," which has a similar but different meaning to the English phrase, "inner feelings of a person" or "mood." The existence or absence of a word in languages is also closely related to the existence or absence of the concept itself in the culture. Although the problem of translation is grounded in language differences, it cannot be solved without cross-cultural understanding.

Some expressions with the same meanings can be used totally differently between cultures. Other expressions with different meanings can be used in the same way in different cultures. For example, Americans often say "sure" in response to "thank you" or "I'm sorry," while Korean people often say "A NI E YO(no)" in response to thanks or apologies. "Sure" and "no" have almost opposite meanings, but in this situation, they are used for the same speech act.

Thus, consideration of cultural contexts in cross-cultural communication is essential to successful interactions both in behavioral and verbal communication. However, to our knowledge, no previous work has seriously considered a systematic method to automate analysis of cultural differences.

GlobalMind Design Points

As previously discussed, cross-cultural communication needs much consideration of cultural backgrounds. Although people have recognized

Related Content

The Effect of Information Resources Management in the UK on Financial Institutions
Victor Chang, Vincent Andrew Kozah, Qianwen Ariel Xu, Yujie Shi, Xihui Haviour Chenand Jonathan Mills (2023). *Journal of Global Information Management (pp. 1-25).*
www.irma-international.org/article/the-effect-of-information-resources-management-in-the-uk-on-financial-institutions/334015

Quality Control for Global Software Development
Rick Gibsonand Eugene G. Mcguire (1996). *Journal of Global Information Management (pp. 16-22).*
www.irma-international.org/article/quality-control-global-software-development/51285

Implementing Flexible Learning in GIS Education: Experiments Using a Spatial Analysis Facility
Pip Forer, Margaret Goldstoneand Felix B. Tan (1998). *Journal of Global Information Management (pp. 33-40).*
www.irma-international.org/article/implementing-flexible-learning-gis-education/51305

Developing an IoT Adoption Framework for Library Management for Public Tertiary Institutions in Ghana
Frank Boateng, Oluwasegun Julius Arobaand Sulaiman Saleem Patel (2024). *Handbook of Research on Innovative Approaches to Information Technology in Library and Information Science (pp. 233-257).*
www.irma-international.org/chapter/developing-an-iot-adoption-framework-for-library-management-for-public-tertiary-institutions-in-ghana/337311

Neuropsychological Features of Gaming Disorder and Psychiatric Comorbidities
Shisei Teiand Junya Fujino (2025). *Encyclopedia of Information Science and Technology, Sixth Edition (pp. 1-18).*
www.irma-international.org/chapter/neuropsychological-features-of-gaming-disorder-and-psychiatric-comorbidities/330126