Intelligent Multimedia Information Access

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Abstract

The expansion of the information highway has generated requirements for more effective access to global and corporate information repositories. These repositories are increasingly multimedia, including text, audio (e.g., spoken language, music), graphics, imagery, and video. The advent of large, multimedia digital libraries has turned attention toward the problem of processing and managing multiple and heterogeneous media in a principled manner, including their creation, storage, indexing, browsing, search, visualization, and summarization.

Intelligent multimedia information access is a multidisciplinary area that lies at the intersection of artificial intelligence, information retrieval, human computer interaction, and multimedia computing. Intelligent multimedia information access includes those systems which go beyond traditional hypermedia or hypertext environments and analyze media, generate media, or support intelligent interaction with or via multiple media using knowledge of the user, discourse, domain, world, or the media itself.

Providing machines with the ability to interpret, generate, and support interaction with multimedia artifacts (e.g., documents, broadcasts, hypermedia) will be a valuable facility for a number of key applications such as videoteleconference archiving, custom on-line news, and briefing assistants. These media facilities, in turn, may support a variety of tasks ranging from training to information analysis to decision support.

In this talk I will describe our group's efforts to provide content based access to broadcast news sources, including our use of corpus-based processing techniques to the problems of video indexing, segmentation, and summarization. In addition to better access to content, we also need to concern ourselves with enabling more effective, efficient and natural human computer or computer mediated human-human interaction. This will require automated understanding and generation of multimedia and demand explicit representation of and reasoning about the user, discourse, task and context (Maybury 1993). To this end, I will describe our work in progress that aims to fully instrument the interface and build (automatically and semi-automatically) annotated corpora of human-machine interaction. We believe this will yield deeper and more comprehensive models of interaction which should ultimately enable more principled interface design.

References

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Speaker Biography

Mark Maybury received his BA in Mathematics from the College of the Holy Cross in 1986 where he was valedictorian. As a Rotary Scholar at Cambridge University, England he received his M.Phil. in Computer Speech and Language Processing in 1987 and his Ph.D. in Artificial Intelligence in 1991 for his dissertation, "Generating Multisentential Text using Communicative Acts". Mark was awarded an MBA from RPI in 1989. Mark has published over fifty technical and tutorial articles in the area of language generation, multimedia presentation and intelligent multimedia information retrieval. He has given tutorials on intelligent multimedia interfaces at multiple international conferences, including CHI, AAAI, IJCAI, COLING, and ACM Multimedia. He chaired the AAAI-91 Workshop on Intelligent Multimedia Interfaces and the IJCAI-95 Workshop on Intelligent Multimedia Information Retrieval and edited collections of the same (AAAI/MIT Press, 1993 and 1997). Mark is Director of the Bedford Artificial Intelligence Center at the MITRE Corporation and Director of MITRE's Advanced Information Systems Center, where he leads a set of seven strategic technology sections which include the disciplines of intelligent information access, data and knowledge management, intelligent training systems, software understanding, high performance networking, collaborative environments, and distributed computing.