# Prospector: A Content-Based Multimedia Server for Massively Parallel Architectures

S. Choo[1], W. O'Connell[2], G. Linderman[1], H. Chen[2], K. Ganapathy[2], A. Biliris[3], E. Panagos[3], D. Schrader[1]

[1]NCR Corporation, 100 North Sepulveda Blvd, El Segundo, CA 90245

[2]Lucent Bell Laboratories, Murray Hill, NJ 07974

[3]AT&T Research, Murray Hill, NJ 07974

## 1 Background

The Prospector Multimedia Object Manager prototype is a general-purpose content analysis multimedia server designed for massively parallel processor environments. Prospector defines and manipulates user defined functions which are invoked in parallel to analyze/manipulate the contents of multimedia objects. Several computationally intensive applications of this technology based on large persistent datasets include: fingerprint matching, signature verification, face recognition, and speech recognition/translation [OIS96].

## 2 Prototype

The Prospector Multimedia Object Manager prototype is an effort by NCR to extend the Teradata database with SQL3 multimedia capabilities [OSC96]. The goal of the prototype is to build a reusable key technology platform that leverages expertise in Teradata parallel database systems and Bell Labs core competencies.

The system provides an infrastructure for loading and execution of user defined functions (UDFs). Execution is accomplished through the use of programmable software agents [OSC96]. Before launching, these agents are programmed with a script describing the UDFs to invoke. Each agent attempts to invoke the UDFs as close to the data as possible in order to prevent large object movement on the interconnect. UDFs typically involve content-based analysis of the objects. Objects in the system are maintained in a parallel persistent storage system which provides parallel storage and retrieval, data availability, and data placement strategies. Prospector utilizes the Bell Labs Storage System (BeSS) as its core storage system to provide persistent storage and allocation, concurrency control and recovery [BOP95].

## 3 Demo

The Prospector Demo at SIGMOD shows a Teradata Electronic Commerce home page, from which users can access a travel agency, a music/video store, and a car showroom. A browser can access HTML objects stored in Prospector. It can also be used to launch parallel software agents represented by "talking heads" to run content-based queries to do color matching on cars. The demo also illustrates general purpose content-based image matching.

## References

[OIS96] W. O'Connell, I.T. Ieong, D. Schrader *et al.*, "A Teradata Content-Based Multimedia Object Manager for Massively Parallel Architecture," ACM SIGMOD '96, Montreal, Canada, June 1996, pp. 68-78.

[OSC96] W. O'Connell, D. Schrader, H. Chen, "*The Teradata SQL3 Multimedia Database Server*," Technology For Multimedia, IEEE Press, Book Chapter, To appear late 1996.

[BOP95] A. Biliris, W. O'Connell, E. Panagos, "BeSS Ref. Guide, Rel. 0.9," Tech. Rept., AT&T Bell Laboratories, March, 1996. The arch. also appears in: "A High Performance Configurable Storage Manager," *Proc. of the IEEE 9th Int'l Conf. on Data Eng.*, Taipei, Taiwan, Mar. 1995, pp. 35-43.



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