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Tobias Mayr

Objective

Position as a researcher, starting in August 2001.

Academic Background

1996 - 2001 Cornell University Ithaca, NY, USA

PhD Studies in Computer Science

Thesis on adaptive parallel data processing, Advisors Prof. Praveen Seshadri and Prof. Johannes Gehrke, Minor in Finance.

My thesis work evaluates new distributed execution techniques in query processing systems (see research statement). The systems component of my work was within the context of the Cornell Predator OR-DBMS. I integrated the Java VM and client-site processing into the execution engine and rebuilt the Predator system as a parallel execution environment.
I was teaching assistant for three courses at Cornell: an introductory class, a class on algorithms, and one on discrete structures. I gave guest lectures in advanced database courses and seminars.

1993 - 1996 Technische Universität München Germany

Undergraduate Studies in Computer Science

Vordiplom in Computer Science, Diploma Thesis on Mobile Network Algebras, Advisors Dr.Radu Grosu, Prof. Manfred Broy, Minor in Computational Linguistics and Philosophy of Language.

I worked on software specification parsing and object-oriented type-checkers.

Internships

Fall 2000 **Microsoft BARC** San Francisco, CA, USA

I worked with Dr. Jim Gray to design and implement a research prototype environment for record stream data exchange on a server cluster.

Summer 1999 **IBM Research** San Jose, CA, USA

I worked with Dr. Mary Tork Roth on the design and implementation of OLEDB data source integration for the Data Joiner distributed database product.

References

References are available upon request from:

Prof. Praveen Seshadri, Cornell University
3/1102 Microsoft, One Microsoft Way, Redmond WA 98052
e-mail: praveen@cs.cornell.edu Phone: 425-705-3231

Prof. Johannes Gehrke, Cornell University
Cornell University, 4108 Upson Hall, Ithaca, NY 14853
e-mail: johannes@cs.cornell.edu Phone: 607-255-1045

Dr. Jim Gray, Microsoft Corporation
Microsoft Research, 301 Howard St #830, San Francisco, CA 94105
e-mail: gray@microsoft.com Phone: 415-778-8222

Research Statement

My research interest is data processing in asymmetric parallel and distributed environments.

Future computer systems will process vast amounts of complex data in parallel environments that consist of many heterogeneous components. Active storage and network components, clients and external sites contribute their data, functionality and processing power to make data processing more scalable, flexible and powerful. These highly non-uniform processing environments must be integrated to form reliable and scalable data processing systems.

My PhD work shows how new processing techniques can be used to allow parallel processing of data while adapting to the heterogeneity of the processing components. I parallelized the execution engine of an existing object-relational database system as a prototype for experimentation with the new parallel query processing techniques. My work demonstrates processing on asymmetric nodes in a cluster as well as the integration of external functionality on server and client sites. The underlying idea is that parallel systems must be aware of the heterogeneity of their components to process data efficiently and to fully integrate all components.

In my future work, I want to apply these ideas to new environments, like mobile device networks, systems with intermittently connected clients, and or peer-to-peer architectures. I want to apply my ideas in actual applications to develop them as realistic solutions to real-world problems.

Publications

Tobias Mayr, Philippe Bonnet, Johannes Gehrke, Praveen Seshadri. **Query Processing with Heterogeneous Resources.** Technical Report TR00-1790, Cornell University.

Tobias Mayr and Praveen Seshadri. **Client-Site Query Extensions.** SIGMOD 1999, pages 347-358

Greg Czajkowski, Tobias Mayr, Praveen Seshadri, and Thorsten von Eicken. **Resource Control for Database Extensions.** COOTS 1999.

Mike Godfrey, Tobias Mayr, Praveen Seshadri, and Thorsten von Eicken. **Secure and Portable Database Extensibility.** SIGMOD 1998, pages 390-401

Tobias Mayr: **A Model for Mobile Networks with Synchronous and Asynchronous Operators.** Diplomarbeit, Technische Universitaet Muenchen, 1996.