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### **Publications**

Speegle, G., "Semantic Atomicity," Encyclopedia of Database Systems, Springer, Liu, Ling, Ozsü, Tamer editors, 2018 (2nd edition).

Speegle, G., "Compensating Transactions," Encyclopedia of Database Systems, Springer, Liu, Ling, Ozsü, Tamer editors, 2018 (2nd edition).

Yang, Q., and Speegle, G., and Baker, E., "On Using Cached Results to Enumerate Maximal k-Cliques in GeneWeaver." Proceedings of the 2017 International Conference on Natural Computation, Fuzzy systems and Knowledge Discovery.

Nazarov, R., and Speegle, G., "Analytic Query Engine." Proceedings of the 2015 International Conference on Advances in Big Data, pp. 12-18, 2015.

Cho, Y-R., Xin, Y. and Speegle, G., "P-Finder: Reconstruction of Signaling Networks from Protein-Protein Interactions and GO Annotations," IEEE/ACM Transactions on Computational Biology and Bioinformatics, Vol 12, No. 2, pages 309-321, March/April 2015.

Speegle, G., Baker, E., "Integration of Big Data Components for NoSQL Problems," Proceedings of the 2014 International Conference on Advances in Big Data, pp 128-134, 2014.

Bai, Y., Speegle, G., Cho, Y-R., "Signaling Pathway Prediction by Path Frequency in Protein-Protein Interaction Networks," International Workshop on Biomolecular Network Analysis, 2013.

Speegle, G., Bai, Y., Cho, Y-R., "Extending Local Similarity Indexes with KNN for Link Prediction." Proceedings Ninth International Conference on Data Mining, 2013.

Hamerly, G., Speegle, G., "Efficient Model Selection for Large-Scale Nearest Neighbor Data Mining," Data Security and Security Data, Lecture Notes in Computer Science, Vol. 6121, pages 37-54, 2012.

Paretti, M., Layton, R., Laguetta, S., Speegle, G., "Managing and Mentoring Capstone Design Teams: Considerations and Practices for Faculty" International Journal of Engineering Education, Vol. 27, No. 6, 2011.

Speegle, G., "Semantic Atomicity," Encyclopedia of Database Systems, Springer, Liu, Ling, Ozsü, Tamer editors, pp. 2588-2591, 2009.

Speegle, G., "Compensating Transactions," Encyclopedia of Database Systems, Springer, Liu, Ling, Ozsü, Tamer editors, pp. 405-406, 2009.

Donahoo, M, Speegle G., *SQL : Practical Guide for Developers*. Morgan-Kaufmann, 2005.

Speegle, G., *JDBC : A Practical Guide for Java Programmers*, Morgan-Kaufmann, September 2001.

Speegle, G., Gao, M., Hu, S., Gruenwald, L., "Extending Databases to Support Image Editing," Proceedings of the IEEE International Conference on Multimedia and Expo, August 2000.

Brown L., Gruenwald L., Speegle, G., "Issues in Using Knowledge to Perform Similarity Searching in Multimedia Databases without Redundant Data Objects," Multimedia Intelligent Storage and Retrieval Management, October 1999.

Brown L., Gruenwald L., Speegle, G., "Issues in Using Specifications to Improve Content-Based Search of Multimedia Data," 1999 International Symposium on Database Applications in Non-Traditional Environments, November 1999.

Speegle, G., Wang, X., Gruenwald, L., "A Meta-Structure for Supporting Multimedia Editing in Object-Oriented Databases," Advances in Databases - 16th British National Conference on Databases, vol. 1405, Springer, pp. 89-102, July 1998.

Brown, L., Gruenwald, L., Speegle, G., "Testing a Set of Image Processing Operations for Completeness," Proceedings of the 2nd Conference on Multimedia Information Systems, pp. 127-134, April 1997.

Speegle, G., Gruenwald, L. "Research Issues in View-Based Multimedia Database Systems", Proceedings of the 2nd World Conference on Integrated Design and Process Technology, pp. 331-336, December 1996.

Speegle, G., "Views of Media Objects in Multimedia Databases," Proceedings of the 1995 International Workshop on Multi-Media Databases, pp. 21-27, August 1995.

Korth, H., Speegle, G., "Formal Aspects of Concurrency Control in Long-Duration Transaction Systems Using the NT/PV Model," ACM Transactions on Database Systems, vol. 19 no. 3, pp. 492-535, September 1994. Authors listed alphabetically.

Speegle, G., "Views as Metadata in Multimedia Databases," Proceedings of the ACM Multimedia '94 Conference Workshop on Multimedia Database Management Systems, pp. 19-26, October 1994.

Speegle, G., Donahoo, M., "Using Statistical Sampling for Query Optimization in Heterogeneous Library Information Systems," Proceedings 21st ACM Computer Science Conference, pp. 475-482, February 1993.

Speegle, G., Gordon, A., "Quantifying the Benefits of Semantics," Proceedings 20th ACM Computer Science Conference, pp 423-430, March 1992.

Korth, H., Speegle, G., "Encapsulation of Transaction Management in Object Databases," Proceedings ECOOP/OOPSLA'90 Workshop on Transactions and Objects, pp. 27-31, October 21, 1990.

Korth, H., Speegle, G., "Long Duration Transactions in Software Design Projects," Proceedings Sixth International Conference on Data Engineering, pp. 568-574, February 1990.

Korth, H., Speegle, G., "Formal Model of Correctness Without Serializability," Proceedings 1988 SIGMOD International Conference on Management of Data, pp. 379-386, June 1988.

Speegle, G., Review of "Structured and Object-Oriented Techniques: An Introduction Using C++," by Staugaard, ACM Computing Reviews, December 1997.

Speegle, G., Review of "BOOKTWO of Object-Oriented Knowledge: The Working Object," by Henderson-Sellers and Edwards, ACM Computing Reviews, August 1995.

Speegle, G., Review of "The Design of a System for Distributed Shared Objects," by Dollimore, et al, , ACM Computing Reviews, January 1993.

Speegle, G., Review of "Conflict Detection Tradeoffs for Replicated Data," by Carey and Livny, ACM Computing Reviews, August 1992.

Speegle, G., Review of "Optimizing Equijoin Queries in Distributed Databases where Relations are Hash Partitioned," by Shasha and Wang, ACM Computing Reviews, June 1992.

Speegle, G., "The NT/PV Model: A New Representation for Long-Duration Transactions Systems," PhD dissertation, University of Texas, 1990.

### **Presentations**

Teaming/Coaching Practice, panel session Capstone Design Conference, 2010

Designing a Capstone Course to Simulate the Industrial Environment, Capstone Design Conference, 2010

Using Graduate Students to Provide AP Computer Science Education, (with Brian Carlgren) ACET, October 2005.

Semantic Image Analysis, invited talk, University of Kentucky, March 2001

Image Editing in Multimedia Databases, invited talk, University of Oklahoma, October 1999.

### **Education**

University of Texas, doctor of philosophy, 1990.

Baylor University, bachelor of science, 1984.

### **Grants and Awards**

Baylor University Grant for "High-performance large-scale graph mining using MapReduce" with Erich Baker, Young-Rae Cho and Greg Hamerly, \$4,450.

Midway Independent School District, 2004-05 for providing AP computer science courses, \$12,000.  
Midway Independent School District, 2003-04 for providing AP computer science courses, \$16,055.  
Midway Independent School District, 2002-03 for providing AP computer science courses, \$10,000.  
Texas Infrastructure Fund, Fall 2002 for infrastructure, education and research. Total award, \$358,435 divided among six projects.

Keck Foundation Award, Spring 2000 for cross-disciplinary curriculum in life sciences. Total award \$500,000 divided among three departments.

Baylor University Grant 009-F95 for "Views in Multimedia Databases," October 1, 1995-December 31, 1996.

Baylor University Grant 010-F90-URC for "NOOTS: Nested Object-Oriented Transaction Systems," November 1, 1990-October 31, 1991.

Baylor University Grant for "Creating an Image Database," December 1, 1999-May 31, 2000.

Baylor University Summer Sabbatical, "Concurrency Control for Nested Object-Oriented Transaction Systems," June 1991-August 1991.

Baylor University Summer Sabbatical, "Interoperability of Library Information Systems," June 1992-August 1992.

Baylor University Summer Sabbatical, "Formal Model for Synchronization of Multimedia Objects," June 1993-August 1993.

Baylor University Summer Sabbatical, "Analytical Models for Semantic-Based Concurrency Control," awarded for June 1994-August 1994.

Baylor University Summer Sabbatical, "Views of Multimedia Databases," awarded for June 1995-August 1995.

Baylor University Summer Sabbatical, "Transaction Processing in Multimedia Databases," awarded for June 1996-August 1996.

Baylor University Sabbatical June 2000-December 2000.

### **Master's Students**

Day, Scott, "Using Semantic Information to Increase Concurrency in Object-Oriented Database." Thesis completed December 1992.

Severson, David, "Comparative Performance Analysis of Hashing and B+-Tree Indexing Methods for Object-Oriented Temporal Databases." Thesis completed December 1992.

Donahoo, Jeff, "Query Optimization in Heterogeneous Library Information Systems." Thesis completed May 1993.

Gordon, Andrew, "Simulation and Analysis of a Semantic-Based Concurrency Control Protocol." Thesis completed August 1993.

Sabhnani, Kailash, "A Logical Model for Multimedia Synchronization." Thesis completed May 1995.

Nair, Pravin, "A Database Design for Multimedia Objects in a Logical Synchronization System." Thesis completed August 1995.

Nayak, Sangeeta, "Synchronization Specifications for Multimedia Presentations." Thesis completed August 1995.

Samagond, Snehlata, "An Implementation of the Anti-Lock Synchronization Protocol." Thesis completed August 1995.

Scogin, Gene, "Multi-Granularity Locking in Object-Oriented Databases over the Composition Graph." Thesis completed December 1996.

Aars, Mike, "Queries on Edited Images." Thesis completed May 1999.

Pottipati, Chandra, "AIRJIM: Adaptive Image Retrieval Using JINI and MPEG-7." Thesis completed August 2004.

Adavi, Krishna, "XDRT: Distributed Peer-to-Peer Indexing and Range Lookup." Thesis completed December 2004.

Chokkalingham, Arun "Analysis of Unreliable Computing on Transaction Throughput." Thesis completed December 2005.

Zheng, Gary, "An Interface for an Object-Oriented Library Information System." Project completed December 1992.

Marstaller, Johanna, "Comparative Performance Measures of Relational and Object-Oriented Databases for High Energy Physics Data." Project completed May 1993.

Wang, Ralph, "Library Information System Based on Object Oriented Design Methodology and MARC Record." Project completed May 1994.

Zhu, Yi, "An Object-Oriented Design for Multimedia Databases." Project completed August 1996.

Wang, Xiaojun, "A Meta-Structure for Multimedia Editing." Project completed October 1996.

Pandey, Rajiv, "A Smalltalk Tool for Analysis of Concurrency Control Protocols." Project completed December 1996.

Liu, Haihong, "Security in HTML Documents." Project completed December 1996.

McCallister, Bob, "An Implementation of an Scriptable Editor." Project completed May 1997.

Zou, Harold, "Optimization of Graphical Operation Sequences in Multimedia Object-Oriented Databases." Project completed May 1998.

Gao, Minghui, "Remote Image Transmission Editing Tool." Project completed May 1999.

Hu, Shaowen, "Transform Instantiation of Images." Project completed August 1999.

Zhou, Ting, "Preservation of Feature Vectors in Edited Images." Project completed May 2000.

Kulkarni, Prashant, "Mobile Agents in E-Commerce." Project completed July 2000.

Wei, Chang, "XPath Representation of Integrity Constraints." Project completed August 2001.

Singh, Jaskaran, "Representing Assertions and Multivalued Dependencies in XML." Project completed December 2002.

Hu, Ning, "Adaptive Query Processing using Relevance Feedback in MPEG-7." Project completed August 2002.

Syed, Sherif, "JINI and Intelligent MPEG-7 Tools." Project completed December 2003.

Koduri, Vinay, "UGNUTella, Updates Using GNUTella." Project completed August 2006.

Brewster, Brandy, "Domain Integration Techniques for Sparse Recommender Systems." Project completed August 2008.

Kallina, Deborah, "Automated Linking of U.S. Supreme Court Documents using Text Mining." Project completed August 2009.

Shrestha, Sweta, "Extending Hibernate." Project completed December 2009.

Meng, Lei, "Efficient M-fold Cross-validation Algorithm for K-Nearest Neighbors." Project completed August 2010

Yao, Yao, "Twitter-Based Recommender System." Project completed August 2011.

Mohan, Deepika, "Hadoop Toolkit for Graph Algorithms." Project completed August 2011.

Yang, Jing, "Map/Reduce Implementation for Graph Entropy Algorithm." Project completed August 2011.

Bai, Yilan, "Bioinformatics Data Mining." Project completed August 2012.

Arora, Sanjeev, "Map/Reduce Analytics." Project completed August 2013.

Jaromerska, Slavka, "Database Atomicity in Peer-to-Peer Systems." Project completed August 2013.

Nazarov, Rovshen, "Analytic Query Language Optimizaer." Project completed August 2015.

Goranov, Theodore, "Optimization for Spatial Join in Big Data." Project in progress.

### **Honor's Students**

Basit, Mujeeb and Parker, Paul, "Application of Image Algebra to Views of Images in Multimedia Databases." April 1997.

### **Undergraduate Research**

Myers, Jonathan, "Adaptive Query Processing for Big Data." Scheduled for completion May 2016.

### **Courses Recently Taught**

Capstone Design Project - A senior level course with industrial sponsorship providing students with a simulated experience of the job environment.

Database Design II - A graduate level course emphasizing transaction processing. It also covers database design, distributed databases and introduces some advanced database topics.

Database Design I - A junior level course emphasizing database design. The course includes a project based upon an existing corporate database. It also covers transaction processing.

Discrete Structures - A freshman introduction to the mathematical concepts underlying computer science.

Other courses taught in the past include Introduction to Computer Science I and II, Multimedia Systems, Object-Oriented Databases, Data Models, Graduate Seminar, Research Seminar and special courses on preparing students for the ACM programming contest.

### **Organizations**

Undergraduate Awards Committee, SIGMOD 2000.

Program Committee, First International Workshop on Multi-Media Data Base Management Systems (IW-MMDBMS), August 1995.

IEEE Task Force on Multimedia Computing, 1992-1994

Institute of Electrical and Electronics Engineers, Computer Science Society, 1990-2019

Association for Computing Machines, 1986-present

SIGMOD 1990-present

SIGMM 1994-2004

### **Major Research Interest**

General Parallelization Theory

Computer Science Education.

### **Experience**

Chair, Department of Computer Science, Baylor University, January 2013-2018.

Interim Chair, Department of Computer Science, Baylor University, August 2011-December 2012.

Professor, Baylor University, August 2006-present

Associate Professor, Baylor University, August 1996-July 2006

Assistant Professor, Baylor University, August 1990-July 1996

Graduate Director, Computer Science Department, 1994-2005, 2010-2011.

Programming Team Advisor, 1990-1996.

Reviewer for ACM Computing Surveys, 1995, 1996

Reviewer for Information Science, 1995

Reviewer for ACM Transactions on Database Systems, 1992-94

Reviewer for IEEE Transactions on Knowledge and Data Engineering, 1993-94, 1998.

Reviewer for Journal of Distributed and Parallel Databases, 1992-93

Reviewer for VLDB Journal, 2004

Consultant to IBM, June 1989, Summer 1991, Fall 1991

Referee for 1991-96 ACM Computer Science Conferences

Referee for 1997, 2000-2005, 2012, 2019-2020 ACM SIGCSE Conference

Referee for ITiSCE 2004-2018

External Referee for 1987-1990 SIGMOD Conferences

Contributor to answer book for textbook, *Database Systems Concepts*

Research Assistant, 9/86-8/90, University of Texas

Teaching Assistant, 9/85-5/86, University of Texas

Laboratory Instructor, 9/83-12/83, Baylor University

### **University Committees**

Illuminate Data Science Subcommittee, 2019-present

University Tenure Committee, 2010-2014

Graduate Council, 1994-2005, 2010-2011

Executive Council, School of Engineering and Computer Science, 1996-2005

Leadership Committee, School of Engineering and Computer Science 2010-present

Health Science Task Force, 2001-2007  
High School Summer Science Research Program, 1994-2007.  
University Research Committee, 1996-1999, 2005-2008  
University Committee on Committees 1999-2005 (chair 2004-05), 2008-2011  
Search Committee for Dean, School of Engineering and Computer Science, 1998  
Academic Research Council, 1996-97  
Outstanding Professor Committee, 1996-2002  
Physical Facilities Committee, 1993-1996