

Tomasz Imielinski

Department of Computer Science
Rutgers University
New Brunswick, NJ. 08903
Ph: 732-445-3551
Net: imielins@cs.rutgers.edu

RESEARCH INTERESTS Mobile wireless computing, Database Mining, Bioinformatics

EDUCATION Ph.D. in Computer Science, Polish Academy of Science, Warsaw, 1982,
B.Sc. in EE. in Politechnica Gdanska 1978

EXPERIENCE

July '96 Professor and Chair, Department of Computer Science, Rutgers University
November '00 Director of the Division of Computer and Information Sciences, Rutgers
University
Sept. '87 to July, 96 Associate Professor, Department of Computer Science, Rutgers University
Sept. '83 to Aug. '87 Assistant Professor, Department of Computer Science, Rutgers University
Sept. '82 to Aug. '83 Assistant Professor, Department of Computer Science, McGill University
September '90 to Visiting Scientist, IBM Almaden Research Center
September 1991

Books

- **Nonstandard answers and Nonstandard Queries**
Oxford Science Publishers, Oxford, 1994, Coedited with R.Demolombe
- **Mobile Computing**
Kluwer Publishers, Boston, February, 1996, Contributed volume - couthored with H.Korth

Journal and Highly Selective Conference Publications

- "On representing incomplete information in relational database
T.Imielinski and W.Lipski, VLDB, Cannes, September 1981, pp. 388-398
- "On Extension of the language for incomplete information systems"
T.Imielinski, *Fundamenta Informatica*, 3-4, pp.319-341, 1982

- "A systematic approach to relational database theory",
T.Imielinski, W.Lipski in *ACM SIGMOD*, May 1982, pp. 8-15
- "A technique for translating states between database schemata"
T.Imielinski, W.Lipski, *ACM SIGMOD*, May 1982, pp. 61-69
- "Inverting Relational Expressions - a uniform and natural technique for various database problems",
T.Imielinski, W.Lipski in *ACM PODS*, March, 1983, pp. 305-312
- "Note on Minimization of the set of attributes"
T.Imielinski *Fundamenta Informatica*, 1-2, pp.196-211, 1983
- "Incomplete Information in Relational Databases"
T.Imielinski, W.Lipski, *Journal of ACM*, Vol. 31, No. 4, October 1984.
- "Cylindric Algebras and Relational Model of data"
T.Imielinski, W.Lipski, *Journal of Computer Systems Sciences*, Vol. 28, No. 1, February 1984.
- "On lossless transformations of database schemes not necessarily satisfying universal instance assumption"
T.Imielinski and N.Spyratos in *ACM PODS*, March 1984, pp. 258-266
- "Integrity Checking for Multiple Updates"
A. Hsu, T.Imielinski, *ACM SIGMOD*, May 1985, pp. 157-168
- "Results on Translating Defaults to Circumscription"
T.Imielinski, *IJCAI*, 1985, pp. 114-120
- "Query Processing in deductive databases with incomplete information"
T.Imielinski, *ACM SIGMOD*, May 1986, pp. 268-280
- "Results on Translating Defaults to Circumscription",
T.Imielinski, *Artificial Intelligence*, Vol. 32 (1987), pp 131-146
- "Intelligent Query Answering in Rule Based System s",
T.Imielinski, *Journal of Logic Programming*, 1987:4, pp. 229-257
- "Relative knowledge in distributed databases",
T.Imielinski in *ACM PODS*, March 1987, pp. 197-210
- "Domain Abstraction and Limited Reasoning",
T.Imielinski, *IJCAI*, 1987, pp. 997-1003
- "Temporal deductive databases and infinite objects"
J.Chomicki and T.Imielinski in *ACM PODS*, March 1988, pp. 61-74

- "Explicit Control of Logic Programs through Rule Algebra"
T.Imielinski and S.Naqvi in *ACM PODS*, March 1988, pp. 103-117
- "Complexity of query processing in databases with OR objects"
T.Imielinski and K. Vadaparty in *ACM PODS*, March 1989, pp.51-66
- "Relational Specifications of Infinite Query Answers"
J.Chomicki, T.Imielinski in *ACM SIGMOD*, May 1989, pp. 174-184
- "The Reuse and Modification of Rulebases by Predicate Substitution"
A.Bonner, T.Imielinski, *EDBT*, Venice, Italy, March 1990
- "Incomplete Objects - A data model for design and planning applications,
T.Imielinski, S.Naqvi and K.Vadaparty, *ACM SIGMOD*, May 1991, pp. 288-298
- "Incomplete Deductive Databases"
T.Imielinski, *Annales of Mathematics and Artificial Intelligence* 3 (1991), 259-294
- "Abstraction in Query Processing"
T.Imielinski, *Journal of ACM*, Vol. 38, July 1991, pp. 534-558
- "Querying in highly mobile distributed environments,"
T. Imielinski and B. R. Badrinath, *18th International conference on Very Large Databases*,
August 1992.
- "An interval classifier for database mining applications",
R.Agrawal, S. Ghosh, T.Imielinski, B.Iyer, A.Swami, VLDB, Vancouver, September 1992,
pp/ 547-560
- "Mining associations rules between sets of items in large databases",
R.Agrawal, T.Imielinski, A.Swami in *ACM SIGMOD*, May 1993, pp. 207-217
- "Database Mining - Performance Perspective"
R.Agrawal, T.Imielinski, A.Swami, *IEEE Transactions of Data and Knowledge Engineering*,
November, 1993
- "Finite Representation of Infinite Query Answers"
J.Chomicki, T.Imielinski, *ACM Transactions of Database Systems*. June 1993, Vol. 18,
Number 2
- "Sleepers and Workoholics" caching strategies in mobile environments",
D.Barbara, T.Imielinski in *ACM SIGMOD*, May 1994, pp. 1-13
- "Energy efficient indexing on air",
T.Imielinski,S.Vishnatwan, B.R.Badrinath in *ACM SIGMOD*, May 1994, pp 25-37

- “Power efficient filtering of data on the air,”
T. Imielinski, S. Vishwanathan, and B. R. Badrinath, *In Proc of EDBT*, LNCS, Springer-Verlag, Vol. 779, March 1994 , pp. 245–258 .
- “Structuring distributed algorithms for mobile hosts,”
B. R. Badrinath, Arup Acharya and T. Imielinski, *In Proc of the 14 ICDCS*, June 1994, pp. 21–28.
- “Wireless mobile computing: Challenges in data management”
T. Imielinski and B. R. Badrinath, *Communications of ACM*, October, 1994.
- ”Complexity Tailored Design”
T.Imielinski, R.Van der Meyden, K.Vadaparty, *Journal of Computer System Sciences*, Vol 151, No 3, 1995
- ”The Reuse and Modifications of Rulebases by Predicate Substitution”
A.Bonner, T.Imielinski *Journal of Computer System Sciences*, October 1995
- ”Sleepers and Workoholics - caching strategies in mobile environments”
D.Barbara, T.Imielinski, *Very Large Databases Journal* , October, 1995
- “Structuring distributed algorithms for mobile networks,”
B. R. Badrinath, Arup Acharya and T. Imielinski, in *Computer Communications*, May, 1995.
- ”Data on Air”
T.Imielinski, Vishnatwan, B.R. Badrinath *IEEE Transactions of Data and Knowledge Engineering*, August 1996,
- ”Database Perspective on Knowledge Discovery”
T.Imielinski and H.Manilla in *Communications of ACM*, November 1996
- ”Mobile Computing - DataMan project perspective”
T.Imielinski, *ACM Nomad Journal*, Balzer Publishers, April 1997
- “GeoCast - messaging with GPS”
J.Navas, T.Imielinski in *ACM MobiCom 97*, Budapest, September, 1997
- ”Metropolitan Area Video on Demand Service Using Pyramid Broadcasting”
S. Vishnathawan, T.Imielinski, in special issue of *ACM/Springer Verlag Multimedia Systems Journal*, January 1998
- “Rules and Whats next?”
T. Imielinski and A.Virmani *Proceedings of ADBIS 1998*, Springer Verlag
- “Geographic Messaging and Routing”
T.Imielinski and J.Navas *Communications of ACM*, January 1999

- “DataSpace - querying and monitoring collections of deeply networked sensors in physical space”
T. Imielinski and Samir Goel; IEEE Personal Communication Magazine, November 2000 also in ACM MOBicom 1999 Workshop
- “MSQL - query language for data mining applications”
T.Imielinski and A. Virmani, Data Mining and Knowledge Discovery Journal, December 1999
- “API for database mining applications”
T.Imielinski, A. Virmani, A. Abdulghani, Data Mining and Knowledge Discovery Journal, December 1999
- “PREMON -Prediction-based Monitoring in Sensor Networks: Taking Lessons from MPEG”
S.Goel, T.Imielinski in ACM SIGCOMM Computer Communications Review, Special Issue on Wireless Extensions to the Internet, Fall 2001
- “Cubegrades: Generalizing association rules”
T. Imielinski, L. Khachiyan, A. Abdulghani, Data Mining and Knowledge Discovery Journal 6, 219-257,2002

Book Chapters

- ”On Algebraic Query Processing in Logical Databases”
Tomasz Imielinski in *Advances in Database Theory*, Gallaire, Minker and Nicolas, Eds, Plenum Press, 1984
- ”On the undecidability of the equivalence problems for relational expressions”
Tomasz Imielinski and W.Lipski in *Advances in Database Theory* Gallaire, Minker, Nicolas, Eds, Plenum Press, 1984
- ”Intelligent Query Answering in Rule Based Systems”
Tomasz Imielinski in *Foundations of Logic Programming and Deductive Databases*, J.Minker Ed, Morgan Kaufman, 1988
- ”Querying in wireless environments”
T. Imielinski and B. R. Badrinath, *Wireless communications Future directions*, edited by Jack Holtzman and David Goodman, Kluwer academic publishers 1993. pp. 85–108
- ”Location Management in Mobile and Wireless Environments” B.R.Badrinath and T.Imielinski, in ”Mobile Computing”, Kluwer 1996
- ”Wireless Publishing” T.Imielinski and S.Visnathawan, in ”Mobile Computing”, Kluwer, 1996

Refereed Conference and Workshop Publications

- "Towards Flexible Interfaces for Relational Database Systems",
T.Imielinski and D.Rozenstein *JCFCT* (Jerusalem Conference on Foundations of Computing Technology, Jerusalem, pp.461-471, May 1984
- "View Maintenance for Multiple Updates",
A.Hsu and T.Imielinski in *Proceedings of the International Conference on Advanced Database Systems*, Seoul, Korea, 1986
- "Locating strategies for Personal Communication Networks,"
B. R. Badrinath, T. Imielinski, and Aashu Virmani, *In IEEE Globecom '92 Workshop*, December 1992.
- "Replication and Mobility,"
B. R. Badrinath and T. Imielinski, *Second Workshop on the Management of Replicated Data*, November 1992
- "Modelling incomplete objects"
S.Naqvi, T.Imielinski,K.Vadaparty, *CIKM*, Washington, November, 1992
- "Handling mobile hosts: A case for indirect interaction,"
B. R. Badrinath, Ajay Bakre, Roy Marantz, and T. Imielinski, *In Fourth Workshop on Workstation Operating Systems (WWOS-IV)*, October 1993.
- "Adaptive Wireless Information Systems"
invited paper at *Proceedings of 100th meeting of SIGDB Japan*, Tokyo, October, 1994
- "Data on Air - whats in it for the database theoretician"
T.Imielinski, invited paper at *ICDT*, January 1995
- "Pyramid broadcasting for video on demand"
S.Vishnatawan, T.Imielinski, *ACM/IEEE Multimedia Conference* , February 1995, San Jose
- "Energy efficient data communication and filtering"
T.Imielinski, M.Gupta, S. Peyyeti, proceedings of *Usenix" Symposium on Location Dependent Computing*, April, 1995
- "From File Mining to Database Mining"
T.Imielinski in *Workshop on Knowledge Discovery and Database Mining*", June 1996, Montreal

Other publications

- "Extending Relational Algebra for Logical Databases". Proceedings of Workshop *Logical Bases for Databases*, Toulouse, December, 1982

- "Updates in Logical Databases"
T.Imielinski, Presented at the XP 4-1/2 Workshop, Stanford, August, 1983
- "Automated Deduction in Incomplete Information databases" in the Proceedings of *Workshop in Logic Programming and Databases*, Washington, DC, August 1986
- "Approximate Reasoning in Logical Databases"
T.Imielinski, M.Dalal, Presented at the AAAI workshop on approximate reasoning, 1989
- "Correct Extensions of Relational Algebra on Tables with Incomplete Information"
T.Imielinski, *IEEE Data Engineering Bulletin*, special issue on Incomplete Information, A.Motro ed, October 1989
- "Wireless Information Services"
D.Goodman and T.Imielinski in ICCT, 1993
- "Impact of mobility on Distributed Computations,"
B. R. Badrinath, Arup Acharya, and T. Imielinski, *SIGOPS Review*, April 1993, p. 15 – 20.
- "Data management for mobile computing,"
T. Imielinski and B. R. Badrinath, *SIGMOD RECORD*, Vol. 22, No. 1, March 1993, pp. 34—39.
- "Dataspace - deeply networked, geographically distributed space of sensors"
T. Imielinski and S.Goel, DIMACS Workshop on Mobile Computing, March 1999
- "SpaceCast Protocol"
T. Imielinski and S.Goel, Proceedings of the Mobicom Workshop on Mobile Databases, Seattle, August 1999
- "DataSpace part 1 - basic concepts"
T. Imielinski and S. Goel. Technical report, November 1999, Rutgers University
- "Dataspace part 2 - protocol design"
S.Goel, T. Imielinski. Technical report, November 1999, Rutgers University

Research Grants

- Principal Investigator, "High Tech Workforce development grant", State of NJ, \$1.6M, 2001-2004
- Co-Principal Investigator, WebDust Project, DARPA, \$2.3M, 2000-2003 (Badri, PI, Imielinski, CoPI)
- Principal Investigator, DataMan Project — Information services for low powered, wireless, mobile clients, DARPA, \$1, 604,379, 1995 - 1999 (CoPI - B.R. Badrinath)

- Co-Principal Investigator, NIMBLE - Many time, Many where wireless communication architecture, DARPA, \$2,150,000, 1997-2000 (PI - B.R.Badrinath)
- Principal Investigator, Wireless Information Services, NSF, \$340,000, NSF, IRI 9509816, 1995-99 (CoPI- B.R Badrinath)
- Principal Investigator, Query Based Approach in Knowledge Discovery in Databases, \$380,000, NSF, IRI 9509819, 1995-99 (CoPI - Haym Hirsh)
- Principal Investigator, Equipmeta grant for Internet Technology Laboratory from Hewlett & Packard, \$207,000 (CoPI - Miles Murdocca)
- Co-Principal Investigator, Equipment Grant for mobile computing, NSF Infrastructure grant, \$29,400 with Kaz Kulikowski (PI), 1993
- Principal Investigator, Data management for mobile computing, NSF exploratory research grant, 7/1/93 — 6/1/94, \$49,950
- Principal Investigator, Database Mining, grant from Prudential Insurance Company, \$25,000 9/1/1994 - 9/1/1995
- Funding through WINLAB: 2 graduate assistants for the 1995/96 academic year, summer assistantships, laboratory equipment for the last 2 years
- Principal Investigator, NSF "Processing Incomplete Knowledge - a database approach" IRI 85-04140, 1985-1988, \$173,113
- Principal Investigator, NSF "Complexity Tailored Design" IRI 87-04614, 1987-1989, \$149,996
- Principal Investigator, NSF, "Dealing with Complexity in Large Deductive Database Systems" \$139,000, 1990-1992

Professional Activities:

Major Recent Invited Conference Talks, Tutorials and Awards

- 2002 VLDB 10-year best paper award; VLDB 2002, Honkong, August 2002
- Tutorial on "Database Mining" - EDBT summer school, Corsica, August 2002
- Keynote speaker at the ACM SIGIR 2001 conference, "Wireless Grafiti - annotating physical space with digital information", September 2001

- “Rules and whats next” Keynote address at the ADBIS Conference, September 1998, Poznan, Poland

Key Conference and Workshop Organization

- Program Committee Chair, ACM MOBICOM, 1999, Seattle
- Local Arrangements Chair, ACM PODS, 1989, Philadelphia
- General Chair of ACM Sigmod, 1990, Atlantic City
- Workshop on Nonstandard queries and answers, Tolouse, July, 1991 Corganized together with R.Demolombe
- Mobile Computing Day, April, 1993 Coorganized together with David Goodman
- NSF sponsored, Mobidata Workshop, 1994 Coorganized with Hank Korth

Citations

- “Mining Association Rules” joint paper with Agrawal and Swami (Sigmod 93), according to citeseer, the most cited paper in machine learning and databases; 17th all time most cited computer science paper (as of July 2002)

Editorships

- ACM Nomad, Baltzer Publishers
- Journal of Knowledge and Data Discovery, Kluwer Publishers