

Dr. Ophir Frieder

Permanent Address:
5600 Wisconsin Ave, Apt. 18D
Chevy Chase, MD 20815

Business Address:
Dept. of Computer Science
Georgetown University
Washington, DC 20057
ophir@ir.cs.georgetown.edu

Areas of Interest (Research and Teaching)

Scalable information processing systems with particular emphasis on health informatics.

Education

University of Michigan, Ann Arbor, Michigan

(1981 – 1987)

Doctor of Philosophy in Computer Science and Engineering, 1987.

Master of Science in Computer Science and Engineering, 1985.

Bachelor of Science in Computer and Communication Sciences, 1984. **(Graduated Summa Cum Laude)**

Employment:

Georgetown University, Washington, District of Columbia

(2007 – 2008; 2010 – present)

Professor

(2012 – present)

Department of Biostatistics, Bioinformatics, & Biomathematics
Georgetown University Medical Center

Professor

(2010 – present)

Department of Computer Science

Robert L. McDevitt, K.S.G., K.C.H.S. and

(2010 – 2020)

Catherine H. McDevitt, L.C.H.S. Professor in Computer Science and Information Processing

Chair

(2010 – 2014)

Department of Computer Science

Royden B. Davis, S. J., Chair in Interdisciplinary Studies

(2007 – 2008)

Illinois Institute of Technology, Chicago, Illinois

(1998 – 2009; leave 2007 – 2008)

IITRI Professor of Computer Science &

Director of the Information Retrieval Laboratory

Department of Computer Science

Florida Institute of Technology, Melbourne, Florida

(1996 – 1998)

Harris Professor of Computer Science and Computer Engineering

Division of Electrical and Computer Science and Engineering

George Mason University, Fairfax, Virginia

(1990 – 1998; leave 1996 – 1998)

Professor,

(1995 – 1998)

Associate Department Chair,

(1994 – 1995)

Associate Professor,

(1992 – 1995)

Assistant Professor,

(1990 – 1992)

Department of Computer Science

Bell Communications Research, Morristown, New Jersey

(1987 – 1990)

Member of Technical Staff

Applied Research Area

Advisory Positions:

Italian National Research Council (ISTI-CNR), Pisa, Italy (2017 – present)
Research Associate
Institute of Information Science and Technology

Invaryant, Inc. (formerly UMBRA Global, LLC), Roswell, Georgia (2015 – present)
Chief Scientific Officer

Board of Advisors (Selected)

QNTFY, Inc. (2016 – present)

Aura Home, Inc. (formerly Pushd, Inc.) (2013 – present)

SUMMIZE (merged with Twitter) (2006 – 2008)

SynnX Solutions GmbH, Germany (acquired by Collexis Holdings) (2006 – 2007)

MicroCreditCard, (acquired by Javien Digital Payment Solutions) (2000 – 2001)

Consulting:

Staff Positions – on average, a day per week:

Harris Corporation, Melbourne, Florida (1996 – 1999; 2001 – 2008)
Consultant to the Information/Government Systems Division

ITT Research Institute, Chicago, Illinois / Bethesda, Maryland (1999 – 2000)
Consultant

Software Productivity Consortium (SPC), Herndon, Virginia (1995 – 1997)
Consultant

Science Applications International Corporation (SAIC), Arlington, Virginia
Consultant (1994 – 1996)

IBM / Loral (from 1994), Manassas, Virginia (1993 – 1994)
Consultant for the Federal Systems Division

Institute for Defense Analysis, Alexandria, Virginia (1992 – 1993)
Consultant to the Computer and Software Engineering Division

Federal Bureau of Investigation, Washington, DC (1991 – 1993)
Consultant to the Technical Services Division at Headquarters

Selected Short Term Consultancy Contracts:

Computer Sciences Corporation (CSC), Landham, Maryland
IBM German Software Development Laboratory, Germany
Computer Data Systems, Inc. (CDSI), Rockville, Maryland
Information Systems & Networks Corporation, Bethesda, Maryland
CALIBRE Systems, Inc., Falls Church, Virginia
The Library Corporation, Inwood, West Virginia

Selected Legal Consulting:

Technical expert or expert witness on intellectual property and contract disputes. Disputed topics include Internet commerce and software technology issues.

- Case: MercExchange vs. GoTo.com
Role: Plaintiff expert witness
Firm: Hunton & Williams

- Case: MercExchange vs. Ebay.com
Role: Plaintiff expert witness
Firm: Hunton & Williams

- Case: Hewlett-Packard vs. Intergraph (third party lawsuit vs. Microsoft)
Role: Defense technical expert for Microsoft
Firm: Venable

- Case: e-Plus.com vs. Ariba.com
Role: Plaintiff expert witness
Firm: Hunton & Williams

- Case: IBM vs. Amazon
Role: Plaintiff technical expert
Firm: Jones Day

- Case: Civix vs. Yellowpages.com, Travelocity.com, Orbitz.com,
National Association of Realtors, Yahoo!.com, & Hotels.com
Role: Plaintiff expert witness
Firm: Niro, Scavone, Haller & Niro / Niro, Haller & Niro

- Case: Nokia vs. Qualcomm
Role: Plaintiff technical expert
Firm: Alston & Bird

- Case: Mapquest vs. Civix (**breach of contract – not IP dispute**)
Role: Defense expert witness
Firm: Niro, Haller & Niro

- Case: I/P Engine vs. Google
Role: Plaintiff expert witness
Firm: Dickstein & Shapiro

- Case: Rockstar vs. Google
Role: Plaintiff technical expert
Firm: Susman Godfrey

- Case: British Telecommunications vs. IAC/Match.com
Role: Plaintiff technical expert
Firm: McDonnell Boehnen Hulbert & Berghoff

Honors

Fellow, American Institute of Medical and Biological Engineering (AIMBE), 2020
Member, Academy of Europe (Academia Europaea), 2018
Member, European Academy of Sciences and Arts (EASA), 2018
Fellow, National Academy of Inventors (NAI), 2014
IEEE Edward J McCluskey Technical Achievement Award, 2008
Association for Information Science & Technology (ASIST) Research Award, 2007
Fellow, Association for Computing Machinery (ACM), 2005
Fellow, American Association for the Advancement of Science (AAAS), 2004
Fellow, Institute of Electrical and Electronics Engineering (IEEE), 2002
NSF National Young Investigator, 1993

Best Paper Awards

Best Paper Award, ACM/ICST 3rd Int'l Conf. on Scalable Information Systems (INFOSCALE), 2008
Best Paper Award, 35th Hawaiian Int'l Conf. on Systems Science (HICSS): Software Track, 2002
Best Paper Award, IEEE 4th Int'l Conf. on Computer & Communications Networks (IC3N), 1995

Local Recognitions

Georgetown University Office of Technology & Commercialization – Crystal Award, 2017
Harris Corporation Corporate Academic Recognition Award, 2009
Springer Science and Business Media – "Top Selling Title" award, 2007
Illinois Institute of Technology – College of Science & Letters Dean's Research Excellence Award, 2005
Florida Institute of Technology – University Wide Research Excellence Award, 1998
Florida Institute of Technology – College of Engineering Research Excellence Award, 1998
Harris Information Systems Division – Contributions Recognition Award, 1997

University Committees Served

Georgetown University (2010 - present)

Member, Graduate Admissions Committee (2019 – 2020)
Member, IT Executive Steering Committee (2012 – 2015)
Member, Steering Committee of GUMC Center for Biomedical Informatics [CBMI] (2011)
Member, Department Evaluation Committee (CFAR) (2010)
Member, Working Group for the Middle States Process (2010)

Illinois Institute of Technology (1998 - 2009)

Chair, University Distinguished Professorship Selection Committee (09/10)
Chair, Computer Science Department Tenure & Promotions Committee (08/09)
Chair, Computer Science Department Awards Committee (01/02, 02/03, 03/04, 04/05, 05/06, 06/07)
Chair, Computer Science Department Recruiting Committee (98/99, 99/00, 00/01, 01/02, 02/03, 03/04)
Member, University Wide Promotions Review Committee (02/03, 03/04, 04/05)
Chair, Chairman Review Committee (03/04)
Member, College of Science and Letters Dean Search Committee (02/03)
Member, University Wide Research Council (99/00, 00/01, 01/02)
Member, Armour College Promotions Review Committee (98/99, 99/00, 00/01, 01/02)
Member, Bioengineering Director Search Committee (99/00)
Member, Computer Science Chair Search Committee (98/99, 99/00)
Member, Armour Dean Search Committee (98/99)

Florida Institute of Technology (1996 - 1998)

Member, University Wide Promotions Review Committee (97/98)
Member, School of Engineering Promotions Review Committee (96/97, 97/98)
Member, Computer Science Department Recruiting Committee (97/98)
Member, Computer Science Department Graduate Committee (96/97)

George Mason University (1990 - 1996)

Chair, Computer Science Department Recruiting Committee (95/96)
Ph.D. Coordinator, School of Information Technology and Engineering (93/94)
School Representative, University Wide High Achievement Committee (93/94)
Member, Computer Science Department Recruiting Committee (91/92, 93/94)
Member, Computer Science Department Graduate Committee (92/93)
Chair, Computer Science Department Graduate Committee (91/92)
Member, School of Information Technology and Engineering Graduate Committee (91/92)
Member, Computer Science Department Undergraduate Committee (90/91)

Professional Activities

Member, National Academy of Science Panel – “Using Multiple Data Sources and State-of-the-Art Estimation Methods in Federal Statistics: Frameworks, Methods, and Assessment”, 2015 – 2017
IEEE Computer Society Fellows Selection Committee Member, 2015 – 2016
ACM Distinguished Lecturer Program, 2002 - 2004
IEEE Distinguished Visitor Program, 2000 - 2002

Editorial Involvement

Editorial Board Member, *Journal of Supercomputing*, 1999 – 2013
Editorial Board Member, *J. of the American Society for Information Science (& Technology)*, 1997–2008
Editorial Board Member, *Information Retrieval*, 1999–2004
Editorial Board Member, *Optical Networks Magazine*, 2001–2003
Editorial Board Member, *IEEE Software*, 1997 & 1998
Associate Editor in Chief, *IEEE Software*, 1995 & 1996
Area Editor: Databases, *IEEE Computer*, 1993 & 1994

Conference Involvement: Leadership Role

Steering Committee Member, *ACM Conf. on Information & Knowledge Management (CIKM)*, 1995–2011
Steering Committee Co-Chair, *ACM/ICST Int'l Conf. On Scalable Information Systems (INFOSCALE)*, 2005–2009
Co-General Chair, *IEEE Third Int'l Symp. on Network Computing & Applications*, 2004
Program Chair for Information Retrieval, *ACM Conf. on Information & Knowledge Management (CIKM)*, 2003.
Co-General Chair, *IEEE Sixth Conf. on Computer & Communications Networks (IC3N)*, 1997.
Co-Program Chair, *IEEE Fifth Conf. on Computer & Communications Networks (IC3N)*, 1996.
Co-Program Chair, *IEEE Fourth Symp. on Assessment of Software Tools*, 1996.
Tutorial Chair, *IEEE Second Conf. on Multimedia Computing Systems*, 1995.
Program Committee Vice-Chair, *IEEE Fifth Conf. on Data Engineering*, 1989.

Conference Involvement: Committee Participation Role

Program Committee, *AAAI Conf. on Artificial Intelligence*, 2016, 2017, 2018
Program Committee, *ACM Digital Health*, 2015
Program Committee, *ACM (SIGIR) Conf. on Res. & Dev. in Information Retrieval*, 1993, 2001, 2003–2007, 2010–2013
Program Committee, *ACM (CIKM) Conf. on Information & Knowledge Management*, 1995–2008, 2010
Program Committee, *IEEE Int'l Symp. on Network Computing & Applications*, 2005–2008
Program Committee, *Int'l Symp. High Performance Computing*, 1999, 2000, 2002, 2003
Program Committee, *IEEE (IC3N) Conf. on Computer & Communications Networks*, 1993–2000, 2002, 2003
Program Committee, *IEEE International Symposium on Network Computing and Applications*, 2001, 2002
Program Committee, *International Conference on Web Information Systems Engineering*, 2001, 2002
Program Committee, *IEEE Data Engineering Conf.*, 1988, 1996, 1998.
Program Committee, *ACM/IEEE Conf. on Systems Integration*, 1992, 1994

Research Presentations Given

Conference Keynote

Keynote, IEEE Int'l Conf. on Distributed Computing Systems (ICDCS), July 7, 2019
Keynote, IEEE Artificial Intelligence & Knowledge Engineering (AIKE), September 27, 2018
Keynote, IEEE Int'l Conf. on Cognitive Informatics & Cognitive Computing, July 26, 2017
Keynote, IEEE/WIC/ACM Int'l Conf. on Web Intelligence, November 18, 2013
Keynote, IEEE Next Generation Information Technology Systems (NGITS), June 17, 2009
Keynote, World Congress in Comp. Sci. Comp. Eng. & Appl. Comp. (WORLDCOMP), July 14, 2008
Keynote, Int'l Conference on Wireless Algorithms, Systems and Applications (WASA), August 2, 2007
Keynote, Workshop on Large-Scale Distributed Systems for Information Retrieval, July 27, 2007
Keynote, Descartes Conf. on Mathematical Models in Counterterrorism, US Capitol, September 29, 2006
Keynote, SPIE Electronic Imaging: Document Recognition and Retrieval XIII, January 19, 2006
Keynote, IEEE Int'l Symposium on Network Computing and Applications (NCA-03), April 18, 2003
Keynote, ACM Int'l Conf. on Information and Knowledge Management (CIKM), November 5, 2002
Keynote, IEEE Int'l Conf. on Information Technology: Coding and Computing, April 8, 2002

University/Industry/Government Distinguished Lecturer

Distinguished Lecture, Ohio State University (Comp. Sci. & Eng. Dept.), November 7, 2019
Distinguished Lecture, Ohio State University (Elect. & Comp. Eng. Dept.), December 5, 2017
Distinguished Lecture, University of California - Irvine (Institute for Future Health), October 30, 2017
Distinguished Lecture, University of Waterloo (School of Computing), October 20, 2016
Speaker, 2016 NASA Ames Summer Series, Ames Research Center, July 12, 2016
Distinguished Lecture, University of Houston (Comp. Sci. Dept.), February 8, 2016
Distinguished Lecture, 2014 Louisiana Distinguished Lecture, University of Louisiana, February 21, 2014
Distinguished Lecture, University of Maryland Baltimore County (Inf. Sys. Dept.), November 13, 2013
Distinguished Lecture, College of William and Mary (Comp. Sci. Dept.), November 2, 2012
Distinguished Lecture, Temple University (Comp. & Inf. Sys. Dept.), February 15, 2012
Distinguished Lecture, Purdue University Discovery Park Cyber Center, April 19, 2010
Distinguished Lecture, Information Science & Technology Center, Colorado State Univ., April 20, 2009
Distinguished Lecture, National Autonomous University of Mexico (UNAM), August 20, 2008
Royden B. Davis, S.J., Lecture, Georgetown University, April 17, 2008
Distinguished Lecture, 6th Shanghai International Industrial Fair Forum, November 3, 2004
Midnight Seminar (Distinguished Lecture), Telcordia Technologies (formerly Bellcore), February 18, 2004.
School of Computer Science Commencement Speaker, Southern Adventist University, 2000

ACM/IEEE Distinguished Lecturer

National Capital Area Computer Society Chapter Distinguished Lecture, April 30, 2019
University of Louisville (IEEE Distinguished Lecture Series), February 3, 2006
Florida International University (IEEE Distinguished Lecture Series), December 9, 2005
DePaul University (ACM Distinguished Lecturer), 2004
University of Central Florida (ACM Distinguished Lecturer), 2003 & 2004
Florida Institute of Technology (ACM Distinguished Lecturer), 2003
University of Nevada – Reno (IEEE Distinguished Visitor), 2001

Industrial and Government Laboratories Talks

America Online, Arab Academy of Science and Technology (Egypt), Argonne National Laboratories, Army Research Laboratory, AT&T Bell Laboratories, BAE Systems, Bell Communications Research (Bellcore), Equifax Corporation, Food and Drug Administration (FDA), Fujitsu Laboratories (Japan), General Dynamics Advanced Information Systems, Harris Information Systems Division, IBM German Software Development Laboratory, IBM Scientific Center Haifa (Israel), IBM T. J. Watson Research Center, IIT Research Institute - Lanham, Institute for Defense Analysis, Instituto Gulbenkian de Ciencia (Portugal), Japan Electrical Industrial Development Association, Jet Propulsion Laboratories, J. P. Morgan Bank - Parallel Technology Division, Lawrence Livermore National Laboratory, Lexis-Nexis, SiTEL of Medstar Health, The MITRE Corporation, Mitsubishi Laboratories (Japan), Motorola, National Institutes of Health, NASA Goddard Space Flight Center, NEC Research Institute, PRT Corporation of America, Space and Naval Warfare (SPAWAR) Systems Center Pacific, Telcordia Technologies, Telemarc Corporation, Tribune Corporation, Twitter, Inc., Yahoo! Research Labs – Barcelona (Spain)

University Talks

Al-Akhawayn University (Morocco), Bar-Ilan University (Israel), Ben-Gurion University (Israel), Carnegie Mellon University, Case Western Reserve University, Central Connecticut State University, City University of New York - Graduate Center, Colorado School of Mines, Emory University, ETH – Zurich (Switzerland), Fu Jen Catholic University (Taiwan), George Mason University, Georgetown University, George Washington University, Georgia Institute of Technology, Harvey Mudd College, Illinois Institute of Technology, Israel Institute of Technology (Israel), Lehigh University, Louisiana State University, Massachusetts Institute of Technology, Milwaukee School of Engineering, National Tsinghua University (Taiwan), New Jersey Institute of Technology, Northwestern University, Purdue University, Rangsit University (Thailand), Rensselaer Polytechnic Institute, Rutgers University, Shanghai Jiao Tong University (China), Stevens Institute of Technology, SUNY at Buffalo, Syracuse University, University Autonomous Metropolitan (UAM – Mexico), University of Bremen (Germany), University of California at Irvine, University of California at Santa Barbara, University of Chicago, University of Colorado at Colorado Springs, University of Illinois at Chicago, University of Illinois at Urbana-Champaign, University of Louisiana at Lafayette, University of Maryland, University of Maryland Baltimore County, University of Minnesota, University of Notre Dame, University of Pennsylvania, University of Tokyo (Japan).

Ph.D. Dissertation Supervision

1. Fotios N. Barlos, DOME: Dynamic Optimization on Multiprocessor Engines - A Statistical Approach, Ph.D. Thesis, George Mason University, May 1993.
2. Kyeongmo S. Park, Parallel Heuristic Approaches to Multiprocessor Data Allocation, Ph.D. Thesis, George Mason University, August 1994. (Co-thesis advisor: Dr. Arun Sood)
3. W. Addison Woods, LTC (Army), Data Organization, Scheduling, and Presentation in Parallel Information Retrieval Architectures, Ph.D. Thesis, George Mason University, May 1995.
4. Tieng K. Yap, High Performance Computing in Genetics, Ph.D. Thesis, George Mason University, May 1995.
5. David Grossman, Integrating Structured Data and Text: A Relational Approach, Ph.D. Thesis, George Mason University, December 1995.
6. Anthony Ruocco, LTC (Army), Parallel Clustering and Classification of Monolithic and Non-Monolithic Document Bases, Ph.D. Thesis, George Mason University, May 1996.
7. Sorin G. Nastea, Parallel Solutions for Sparse Matrix Computations, Ph.D. Thesis, George Mason University, December 1996.
8. Alaa Sheta, Identification and Control of Dynamical Systems Using Genetic Algorithms, Ph.D. Thesis, George Mason University, August 1997. (Co-thesis advisor: Dr. Kenneth De Jong)
9. Carol Lundquist, Relational Information Retrieval: Using Relevance Feedback and Parallelism to Improve Accuracy and Performance, Ph.D. Thesis, George Mason University, December 1997.
10. Brian Willard, Large Scale Information Retrieval Systems: Resolving Memory Leaks in Non-Cooperative Server Applications, Ph.D. Thesis, Florida Institute of Technology, May 1998.
11. Richard James, Performance Considerations for Information Filtering Systems Using Database Technology, Ph.D. Thesis, Florida Institute of Technology, May 1998.
12. Nicole Melander, Multiple Document Summarization for Written Argumentative Discourse, Ph.D. Thesis, George Mason University, August 1999.
13. Kenneth Alford, LTC (Army), Parallel Information Retrieval and Visualization on Large, Unstructured Document Collections Using Web Link Information, Ph.D. Thesis, George Mason University, May 2000. (Co-thesis advisor: Dr. Jim Chen)
14. M. Catherine McCabe, Information Extraction and Fusion for Information Retrieval Effectiveness, Ph.D. Thesis, George Mason University, August 2000.
15. Abdur Chowdhury, On the Design of Reliable and Efficient Information Servers, Ph.D. Thesis, Illinois Institute of Technology, May 2001.
16. Salim Mounir Alaoui, On the Clustering, Fusion, and Balanced Distribution of Data for Information Retrieval, Ph.D. Thesis, Florida Institute of Technology, May 2002. (Co-thesis advisor: Dr. Phil Bernhard)
17. Mohammed Aljlal, On Arabic Search: The Effectiveness of Monolingual and Bidirectional Information Retrieval, Ph.D. Thesis, Illinois Institute of Technology, July 2002.
18. Vincent Nguyen, Channel Alternation and Rotation for Sectorized Wireless Systems, Ph.D. Thesis, Illinois Institute of Technology, May 2003. (Co-thesis advisor: Dr. Peng-Jun Wan)
19. S. Kagan Agun, Hardware Assisted Pruned Inverted Index Component Design and Implementation, Ph.D. Thesis, Illinois Institute of Technology, December 2004.
20. Steven Beitzel, On Understanding and Classifying Web Queries, Ph.D. Thesis, Illinois Institute of Technology, May 2006.
21. Eric Jensen, Repeatable Evaluation of Information Retrieval Effectiveness in Dynamic Environments, Ph.D. Thesis, Illinois Institute of Technology, May 2006.
22. Eric Burger, Ubiquitous Reach and Remote Control of Devices, Ph.D. Thesis, Illinois Institute of Technology, May 2006.
23. Rebecca Cathey, On Scalable Search, Ph.D. Thesis, Illinois Institute of Technology, December 2007.
24. Jay Urbain, Multievidentiary Models for Genomics Search, Ph.D. Thesis, Illinois Institute of Technology, December 2008.
25. Dongmei Jia, Improving Search Quality in Peer-to-Peer File Sharing Systems, Ph.D. Thesis, Illinois Institute of Technology, December 2008. (Co-thesis advisor: Dr. Wai Gen Yee)
26. Linh Nguyen, Improving the Accuracy and Efficiency of Result Retrieval in Peer-to-Peer Networks, Ph.D. Thesis, Illinois Institute of Technology, May 2009. (Co-thesis advisor: Dr. Wai Gen Yee)

27. Tayo Obafemi-Ajayi, Computational Models for Historical Document Image Enhancement, Ph.D. Thesis, Illinois Institute of Technology, December 2010. (Co-thesis advisor: Dr. Gady Agam)
28. Jon Parker, Effective and Efficient Binarization of Degraded Document Images, Ph.D. Thesis, Georgetown University, May 2016.
29. Jason Soo, Search in Adverse Environments, Ph.D. Thesis, Georgetown University, May 2016.
30. Andrew Yates, Identifying Real World Concepts in Social Media, Ph.D. Thesis, Georgetown University, May 2016. (Co-thesis advisor: Dr. Nazli Goharian)

MS Thesis Supervision

1. Lynn Allen, Exploiting Database Technology in Medical Arenas: A Critical Assessment of PACS, New Jersey Institute of Technology, May 1991.
2. James Villani, Design and Development of a Parallel Protocol Verification System Prototype for a Hypercube Multicomputer, George Mason University, May 1993.
3. Ajay Gupte, Compression Within a Context-Sensitive Commercial Random Access Domain, George Mason University, May 1993.
4. Elizabeth Pulley, A Text Preprocessor for Relevance Ranking in the Relational Model, George Mason University, May 1994.
5. John Reichert, Implementation Details of Relevance Feedback in an Information Retrieval Systems, George Mason University, December 1996.
6. Abdur Chowdhury, DRS: A Fault Tolerant Network Routing System For Mission Critical Distributed Applications, George Mason University, December 1996.
7. Kashyap Kamdar, Pathfinder: Document Information Retrieval from Heterogeneous Platforms, Florida Institute of Technology, May 1998.
8. Wei Guan, Internal-Based Timing Constraints with Non-Uniform Distribution of Event Occurrence, Illinois Institute of Technology, July 2005.

International (European) Patent

- “Dynamic Memory Reclamation without Programmer, Compiler or Linker Assistance”. Assignee: Northrop Grumman Corporation. **EPO Patent #EP0959409**. Issued June 25, 2003. (Co-Inventor: B. Willard)
- “Remote Control of Device by Telephone or Other Communication Devices,” Assignee: Dialogic Corporation.
EPO Patent #EP1989866. January 3, 2018. (Co-Inventor: E. Burger)
- “Method and System for Managing Information on Mobile Devices,” Assignee: Georgetown University.
EPO Patent # EP2702719. January 24, 2018. (Co-Inventors: M. Sherr and J. Wilberding)

US Patents and Patent Applications

1. “Dynamic Algorithm Selection for Isocontour and Body Extraction within a Multiple Instruction Multiple Data Multiprocessor”. Assignee: The United States of America as represented by the Secretary of the Air Force. **US Patent #5,201,035**. April 6, 1993. (Co-Inventor: M. R. Stytz.)
2. “Dynamic Query Optimization Using Partial Information”. Assignee: Bell Communications Research, Inc. **US Patent #5,335,345**. August 2, 1994. (Co-Inventor: G. Frieder.)
3. “Parallel Document Clustering Process”. Assignee: The United States of America as represented by the Secretary of the Army. **US Patent #5,864,855**. January 26, 1999. (Co-Inventor: A. Ruocco.)
4. “Dynamic Memory Reclamation without Programmer, Compiler or Linker Assistance”. Assignee: Northrop Grumman Corporation. **US Patent #6,125,434**. September 26, 2000. (Co-Inventor: B. Willard.)
5. “Multiple Engine Information Retrieval and Visualization System”. Assignee: Harris Corporation. **US Patent #6,574,632**. June 3, 2003. (Co-Inventors: K. Fox, M. Knepper, J. Nemethy, E. Snowberg, G. Cusick, and R. Killam)
6. “Multiple Engine Information Retrieval and Visualization System”. Assignee: Harris Corporation. **US Patent #6,701,318**. March 2, 2004. (Co-Inventors: K. Fox, M. Knepper, J. Nemethy, E. Snowberg, G. Cusick, and R. Killam.)
7. “Optimal Placement of Wavelength Converters in Trees and Trees of Rings,” Assignee: Illinois Institute of Technology. **US Patent #6,772,102**. August 3, 2004. (Co-Inventors: P-J Wan and L. Liu)
8. “Technique for Establishing a Virtual Backbone in an Ad Hoc Wireless Network,” Assignee: Illinois Institute of Technology. **US Patent #6,839,541**. January 4, 2005. (Co-Inventors: K. Alzoubi and P.-J. Wan)
9. “Intranet Mediator,” Assignee: Illinois Institute of Technology. **US Patent #6,904,428**. June 7, 2005. (Co-Inventor: D. Grossman)
10. “Detection of Misuse of Authorized Access in an Information Retrieval System,” Assignee: Illinois Institute of Technology. **US Patent #7,299,496**. November 20, 2007. (Co-Inventor: D. Grossman)
11. “System and Method for Providing User Input Information to Multiple Independent, Concurrent Applications,” Assignee: Dialogic Corporation. **US Patent #7,406,696**. July 29, 2008. (Co-Inventor: E. Burger)
12. “Method and Kits for Managing Diagnosis and Therapeutics of Bacterial Infections,” Assignees: Northwestern University and Illinois Institute of Technology. **US Patent #7,418,399**. August 26, 2008. (Co-Inventor: A. Schaeffer)
13. “Automatic Generation of Document Summaries through Use of Structured Text”. Assignee: Oracle Corporation. **US Patent #7,509,572**. March 24, 2009. (Co-Inventor: N. Melander)
14. “Hardware Assisted Pruned Inverted Index Component,” Assignee: Illinois Institute of Technology. **US Patent #7,533,245**. May 12, 2009. (Co-Inventor: S. K. Agun)
15. “Method for Improving Local Descriptors in Peer-to-Peer File Sharing”, Assignee: Illinois Institute of Technology. **US Patent #7,558,789**. July 7, 2009. (Co-Inventor: W. G. Yee).
16. “Method for Re-Ranking Documents Retrieved from a Multi-Lingual Document Database.” Assignee: Harris Corporation. **US Patent #7,603,353**. October 13, 2009. (Co-Inventors: K. Fox and M. Knepper)
17. “Method for the Construction and Utilization of a Medical Records System,” Assignee: Northwestern University and Illinois Institute of Technology. **US Patent #7,627,489**. December 1, 2009. (Co-Inventor: A. Schaeffer)
18. “System for Similar Document Detection”. Assignee: Alion Science and Technology Corporation. **US Patent #7,660,819**. February 9, 2010. (Co-Inventor: A. Chowdhury)
19. “Hierarchical Structured Abstract File System,” Assignee: Illinois Institute of Technology. **US Patent #7,720,869**. May 18, 2010. (Co-Inventors: S. Kapoor and N. Kirubanandan)
20. “Peer-to-Peer File Sharing,” Assignee: Illinois Institute of Technology. **US Patent #7,779,006**. August 17, 2010. (Co-Inventor: W. G. Yee).

21. "Image-Based Indexing and Classification in Image Databases," Assignee: Illinois Institute of Technology. **US Patent #7,787,711**. August 31, 2010. (Co-Inventor: G. Agam).
22. "Method for Re-Ranking Documents Retrieved from a Document Database." Assignee: Harris Corporation. **US Patent #7,801,887**. September 21, 2010. (Co-Inventors: K. Fox and M. Knepper.)
23. "Method for Domain Identification of Documents in a Document Database." Assignee: Harris Corporation. **US Patent #7,814,105**. October 12, 2010. (Co-Inventors: K. Fox and M. Knepper.)
24. "Peer-to-Peer File Sharing," Assignee: Illinois Institute of Technology. **US Patent #7,860,876**. December 28, 2010. (Co-Inventor: W. G. Yee).
25. "Remote Control of Device by Telephone or Other Communication Devices," Assignee: Dialogic Corporation. **US Patent #7,885,272**. February 8, 2011. (Co-Inventor: E. Burger)
26. "Automatic Generation of Document Summaries through Use of Structured Text". Assignee: Oracle Corporation. **US Patent #8,032,827**. October 4, 2011. (Co-Inventor: N. Melander)
27. "System for Similar Document Detection". Assignee: Alion Science and Technology Corporation. **US Patent #8,131,724**. March 6, 2012. (Co-Inventor: A. Chowdhury)
28. "Process to Allocate Channels in a Sectorized Cellular Network," Assignee: Illinois Institute of Technology. **US Patent #8,165,591**. April 24, 2012. (Co-Inventors: V. Nguyen and P.-J. Wan)
29. "Process to Allocate Channels in a Sectorized and Tiered Cellular Network," Assignee: Illinois Institute of Technology. **US Patent #8,195,172**. June 5, 2012. (Co-Inventors: V. Nguyen and P.-J. Wan)
30. "Hierarchical Structured Abstract Data Organization System," Assignee: Illinois Institute of Technology. **US Patent #8,209,358**. June 26, 2012. (Co-Inventor: S. Kapoor)
31. "Refined Permission Constraints Using Internal and External Data Extraction in a Role-Based Access Control System," Assignee: Illinois Institute of Technology. **US Patent #8,271,527**. September 18, 2012. (Co-Inventor: S. Ren)
32. "Automated Forensic Document Signatures," Assignee: Georgetown University. **US Patent #8,280,905**. October 2, 2012. (Co-Inventors: T. C. Shields and M. Maloof)
33. "System and Method for Providing User Input Information to Multiple Independent, Concurrent Applications," Assignee: Dialogic Corporation. **US Patent #8,286,190**. October 9, 2012. (Co-Inventor: E. Burger)
34. "Automated Forensic Document Signatures," Assignee: Georgetown University. **US Patent #8,312,023**. November 13, 2012. (Co-Inventors: T. C. Shields and M. Maloof)
35. "Automated Forensic Document Signatures," Assignee: Georgetown University. **US Patent #8,438,174**. May 7, 2013. (Co-inventors: T. C. Shields and M. Maloof)
36. "Method for Improving Local Descriptors in Peer-to-Peer File Sharing", Assignee: Illinois Institute of Technology. **US Patent #8,543,595**. September 24, 2013. (Co-Inventor: W. G. Yee).
37. "System for Similar Document Detection". Assignee: Alion Science and Technology Corporation. **US Patent #8,560,546**. October 15, 2013. (Co-Inventor: A. Chowdhury)
38. "Hierarchical Structured Abstract Data Organization System," Assignee: Illinois Institute of Technology. **US Patent #8,626,792**. January 7, 2014. (Co-Inventor: S. Kapoor)
39. "Method and System for Managing Information on Mobile Devices," Assignee: Georgetown University. **US Patent #8,819,448**. August 26, 2014. (Co-Inventors: M. Sherr and J. Wilberding)
40. "System and Method for Evaluating Sentiment," Assignee: Twitter, Inc. **US Patent #8,862,591**. October 14, 2014. (Co-Inventors: A. Chowdhury, G. Pass, and A. Virdy)
41. "System and Method for Enhancing the Legibility of Degraded Images" Assignee: Georgetown University. **US Patent #8,995,782**. March 31, 2015. (Co-Inventors: G. Frieder and J. Parker)
42. "System and Method for Evaluating Sentiment," Assignee: Twitter, Inc. **US Patent #9,092,421**. July 28, 2015. (Co-Inventors: A. Chowdhury, G. Pass, A. Virdy)
43. "Hierarchical Structured Data Organization System," Assignee: Illinois Institute of Technology. **US Patent #9,128,954**. September 8, 2015. (Co-Inventor: S. Kapoor)
44. "Hierarchical Structured Data Organization System," Assignee: Illinois Institute of Technology. **US Patent #9,183,220**. November 10, 2015. (Co-Inventor: S. Kapoor)
45. "Method and System for Managing Information on Mobile Devices," Assignee: Georgetown University. **US Patent #9,191,811**. November 17, 2015. (Co-Inventors: M. Sherr and J. Wilberding)
46. "Automated Mobile Positional Social Media Method and System," Assignee: Pushd Inc., **US Patent #9,225,789**. December 29, 2015. (Co-Inventors: C. Carella, B. Cherry, A. Chowdhury, T. Howarth, E. Jensen, M. Sanford)
47. "System and Method for Enhancing the Legibility of Images," Assignee: Georgetown University. **US Patent #9,269,126**. February 23, 2016. (Co-Inventors: G. Frieder and J. Parker)

48. "Automated Electronic Reminders for a Mobile User," Assignee: Pushd Inc., **US Patent #9,288,616**. March 15, 2016. (Co-Inventors: C. Carella, B. Cherry, A. Chowdhury, T. Howarth, E. Jensen, M. Sanford)
49. "System and Method of Applying State of Being to Health Care Delivery", Assignee: Georgetown University. **US Patent #9,305,140**. April 6, 2016. (Co-Inventors: E. Burger, H. Federoff)
50. "Method and System for Tracking a Mobile User," Assignee: Pushd Inc., **US Patent #9,338,759**. May 10, 2016. (Co-Inventors: C. Carella, B. Cherry, A. Chowdhury, T. Howarth, E. Jensen, M. Sanford)
51. "System and Method for Enhancing the Legibility of Degraded Images" Assignee: Georgetown University. **US Patent #9,361,676**. June 7, 2016. (Co-Inventors: G. Frieder and J. Parker)
52. "Automated Sharing of User Pictograms in a Mobile Positional Social Media Method and System," Assignee: Pushd Inc., **US Patent #9,386,052**. July 5, 2016. (Co-Inventors: B. Cherry, A. Chowdhury, T. Howarth, E. Jensen, A. Lorek, I. Ownbey, M. Sanford)
53. "Automated Deduction of User Locations and Activities in a Mobile Positional Social Media Method and System," Assignee: Pushd Inc., **US Patent #9,420,015**. August 16, 2016. (Co-Inventors: B. Cherry, A. Chowdhury, T. Howarth, E. Jensen, A. Lorek, I. Ownbey, M. Sanford)
54. "Automated Notification of Social Media Member Events," Assignee: Pushd Inc., **US Patent #9,439,038**. September 6, 2016. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, A. Lorek, M. Sanford)
55. "Automated Personalized Picture Frame," Assignee: Pushd Inc., **US Patent #9,472,166**. October 18, 2016. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, A. Kolcz, S. Milstein, R. Sanford, D. Waldron, J. Wirt)
56. "Automated Location and Activity Aware Medical Monitoring," Assignee: Pushd Inc., **US Patent #9,498,163**. November 22, 2016. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, M. Sanford)
57. "Enhancing the Legibility of Images Using Monochromatic Light Sources" Assignee: Georgetown University. **US Patent #9,525,802**. December 20, 2016. (Co-Inventors: G. Frieder and J. Parker)
58. "Collaborative and Personalized Storage and Search in Hierarchical Structured Abstract Data Organization Systems," Assignee: Illinois Institute of Technology. **US Patent #9,633,028**. April 25, 2017. (Co-Inventor: S. Kapoor)
59. "System and Method for Evaluating Sentiment," Assignee: Twitter, Inc. **US Patent #9,857,946**. January 2, 2018. (Co-Inventors: A. Chowdhury, G. Pass, A. Virdy)
60. "Medical Monitoring with Location and Activity Tracking," Assignee: Pushd Inc., **US Patent #10,039,504**. August 7, 2018. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, M. Sanford)
61. "Weighted Metalabels for Enhanced Search in Hierarchical Abstracts Data Organization Systems," Assignee: Illinois Institute of Technology. **US Patent #10,042,898**. August 7, 2018. (Co-Inventor: S. Kapoor)
62. "Automated Determination of Mobile User Locations and Notification of Social Media Member Events," Assignee: Pushd Inc., **US Patent #10,045,152**. August 7, 2018. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, M. Sanford)
63. "Automated Determination of Mobile User Locations and Deduction of User Activities at the User Locations," Assignee: Pushd Inc., **US Patent #10,051,433**. August 14, 2018. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, M. Sanford)
64. "Automated Location Determination and Electronic Reminders," Assignee: Pushd Inc., **US Patent #10,063,999**. August 28, 2018. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, M. Sanford)
65. "Enhancing the Legibility of Images Using Monochromatic Light Sources" Assignee: Georgetown University. **US Patent #10,157,450**. December 18, 2018. (Co-Inventors: G. Frieder and J. Parker)
66. "System and Method of Applying State of Being to Health Care Delivery", Assignee: Georgetown University. **US Patent #10,162,940**. December 25, 2018. (Co-Inventors: E. Burger, H. Federoff)
67. "Location and Activity Tracking for Medical Monitoring," Assignee: Pushd Inc., **US Patent #10,314,550**. June 11, 2019. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, M. Sanford).
68. "Clustering Photographs for Display on a Digital Picture Frame," Assignee: Pushd Inc., **US Patent #10,430,986**. October 1, 2019. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, A. Kolcz, M. Sanford).
69. "Automated Method of Displaying Personalized Photos on a Digital Picture Frame," Assignee: Pushd Inc., **US Patent #10,467,986**. November 5, 2019. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, A. Kolcz, S. Milstein, R. Sanford, D. Waldron, J. Wirt).
70. "Digital Picture Frame with Automated Interactions with Viewer and Viewer Devices," Assignee: Pushd Inc., **US Patent #10,474,407**. November 12, 2019. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, A. Kolcz, S. Milstein, M. Sanford, D. Waldron, J. Wirt).
71. "Automated Mobile User Location Determination and Event Notification," Assignee: Pushd Inc., **US Patent #10,499,210**. December 3, 2019. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, M. Sanford)
72. "Cache Optimization via Topics in Web Search Engines", Assignee: Georgetown University. **US Patent #10,503,792**. December 10, 2019. (Co-Inventors: I. Mele, R. Perego, N. Tonello)

73. "Automated User Mobile Device Location Tracking and Reminders," Assignee: Pushd Inc., **US Patent #10,505,880**. December 10, 2019. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, M. Sanford)
74. "Method of Deducing Mobile User Locations and User Activities," Assignee: Pushd Inc., **US Patent #10,506,382**. December 10, 2019. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, M. Sanford)
75. "System, Method, and Storage Medium for Generating Hypotheses in Data Sets," Assignee: Georgetown University. **US Patent #10,521,727**. December 31, 2019. (Co-Inventors: D. Hartley).
76. "Clustering and Filtering Digital Photos by Content and Quality for Automated Display," Assignee: Pushd Inc., **US Patent #10,592,186**. March 17, 2020. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, A. Kolcz, M. Sanford).
77. "System and Method for Performing Pharmacovigilance", Assignee: Georgetown University. Pending application number 13/543,044, filed on July 6, 2012. (Co-Inventor: H. Federoff)
78. "System, Method, and Storage Medium for Generating Hypotheses in Data Sets," Assignee: Georgetown University. Pending application number 15/242,325, filed on August 19, 2016. (Co-Inventors: D. Hartley)
79. "Heterogeneous String Search Structures with Embedded Range Search Structures," Assignee: Illinois Institute of Technology. Pending application number 15/276,022, filed on September 26, 2016. (Co-Inventors: S. Kapoor)
80. "Systems and Methods for Targeted Radiology Resident Training," Assignee: MedStar Health. Pending application number 15/410,850, filed January 20, 2017. (Co-Inventors: A. Cohan, R. Filice, A. Fong, N. Goharian, R. Ratwani, L. Soldaini)
81. "Discovery and Analysis of Drug-Related Side Effects," Assignee: Georgetown University. Pending application number 15/576,604, filed on May 23, 2016. (Co-Inventors: S. Shah, H. Federoff)
82. "Orthopedic Devices and Systems Integrated with Controlling Devices," Assignee: UMBRA Health Corporation, Pending application number 15/620,339, filed on June 12, 2017. (Co-Inventor: R. Dempers)
83. "Intelligent Medical Hypertext Information Translator," Assignee: Georgetown University. Pending application number 15/626,006. Filed on June 16, 2017. (Co-Inventor: J. Garman)
84. "Digital Picture Frame with Improved Display of Community Photographs," Assignee: Pushd Inc., Pending application number 15/824,337, filed on November 28, 2017. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, A. Kolcz, M. Sanford)
85. "System and Method for Assessing Content," Assignee: Twitter, Inc. Pending application number 15/859,570, filed on December 31, 2017. (Co-Inventors: A. Chowdhury, G. Pass, A. Viridy)
86. "Computerized Analysis of Team Behavior and Communication to Quantify and Optimize Team Function," Assignee: QNTFY, Inc. Pending application number 16/007,218, filed on June 13, 2018. (Co-Inventors: G. Coppersmith, P. Crutchley, R. Leary, A. Wood, A. Yelskiy)
87. "System and Method for Predictive and Preventative Treatment Guidance for Secure Storage Electronic Medical Records," Assignee: UMBRA Health Corporation, Pending application number 16/016,782, filed on June 25, 2018. (Co-Inventor: R. Dempers)
88. "Context Weighted Metalabels for Enhanced Search in Hierarchical Abstract Data Organizational Systems," Assignee: Illinois Institute of Technology, Pending application number 16/047,126, filed on July 27, 2018. (Co-Inventors: S. Kapoor)
89. "Method and System for Brain Attack Triage (BAT)," Assignee: NaviSalutE LLC. Pending application number 16/111,248, filed on August 24, 2018. (Co-Inventors: H. Federoff, M. Fiandaca, R. Jain)
90. "Automated Routing and Display of Community Photographs in Digital Picture Frame," Assignee: Pushd Inc., Pending application number 16/113,366, filed on August 27, 2018. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, A. Kolcz, M. Sanford)
91. "Enhancing the Legibility of Images Using Monochromatic Light Sources" Assignee: Georgetown University. Pending application number 16/175,582, filed on October 30, 2018. (Co-Inventors: G. Frieder and J. Parker)
92. "System and Method of Applying State of Being to Health Care Delivery", Assignee: Georgetown University. Pending application number 16/189,216, filed on November 13, 2018. (Co-Inventors: E. Burger, H. Federoff)
93. "Location and Activity Tracking for Medical Monitoring," Assignee: Pushd Inc., pending application number 16/432,373, filed on June 5, 2019. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, M. Sanford).
94. "Digital Picture Frame Photograph Clustering," Assignee: Pushd Inc., pending application number 16/563,511, filed on September 6, 2019. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, A. Kolcz, M. Sanford).
95. "Cache Optimization via Topics in Web Search Engines", Assignee: Georgetown University. Pending application number 16/654,725 filed on October 16, 2019, & PCT/US2019/031723, filed on May 10, 2019. (Co-Inventors: I. Mele, R. Peregó, N. Tonello).

96. "Specialized Computing Environment for Co-Analysis of Proprietary Data," Assignee: Cincinnati Children's Hospital Medical Center & Georgetown University. Pending application number 16/663,547, filed on October 25, 2019. (Co-Inventor: D. Hartley)
97. "Digital Picture Display System with Photo Clustering and Filtering," Assignee: Pushd Inc., pending application number 16/814,330, filed on March 10, 2020. (Co-Inventors: B. Cherry, A. Chowdhury, E. Jensen, A. Kolcz, M. Sanford).
98. "Automatic Re-Analysis of Genetic Testing Data," Assignee: Georgetown University. Pending application number 16/842,509, filed on April 7, 2020. (Co-Inventors: A. Pandey, H. Federoff)
99. "Detecting COVID-19 Using Surrogates," Assignee: Georgetown University. Pending application number 16/878,433, filed on May 19, 2020. (Co-Inventor: H. Federoff).
100. "An Apparatus and Process for Optimizing Radiation Detection Counting Times Using Machine Learning," Assignee: Oregon State University & Georgetown University, PCT/US2019/020613, filed on March 4, 2019. (Co-Inventor: J. Curtis, S. Reese)
101. "Generating Hypotheses and Recognizing Events in Data Sets," Assignee: Georgetown University, PCT/US2019/034824, filed on May 31, 2019. (Co-Inventor: D. Hartley, N. Yossinger)
102. "Method and System for Parametric Speech Synthesis," Assignee: Georgetown University, PCT/US2019/37294, filed on June 19, 2019. (Co-Inventor: J. Garman)
103. "Multiple Graph Kernel Fusion Prediction of Drug Prescription," Assignee: Georgetown University, Pending provisional application number 62/930,072, filed on November 4, 2019. (Co-Inventors: D.-C. Chang, H.-R. Yao)
104. "Method and Apparatus for Real-Time Learning-Based Augmented Irradiation Control and Optimization," Assignee: Oregon State University & Georgetown University, provisional application number 63/026.593, filed on May 18, 2020. (Co-Inventor: M. Gomez-Fernandez, S. R. Reese)

US Design Patents

- "Combination Digital Picture Frame and Cable Wall Mount," **US Design Patent #D805,309**. December 19, 2017. (Co-Inventors: N. Bhakta, S. Chapps, B. Cherry, A. Chowdhury, E. Jensen, A. Kolcz, S. Milstein, E. Moyer, M. Sanford, A. Urmey, D. Waldron, J. Wirt)
- "Digital Picture Frame," Assignee: Pushd Inc., **US Design Patent #D818,723**. May 29, 2018. (Co-Inventors: N. Bhakta, S. Chapps, B. Cherry, A. Chowdhury, E. Jensen, A. Kolcz, S. Milstein, E. Moyer, M. Sanford, A. Urmey, D. Waldron, J. Wirt)

Books

1. T. Yap, O. Frieder, R. Martino, High Performance Computational Methods for Biological Sequence Analysis, Kluwer Academic Publishers, ISBN 0-7923-9724-X, 1996.
2. R. Shuey, D. Spooner, and O. Frieder, The Architecture of Distributed Computer Systems: A Data Engineering Perspective, Addison Wesley, ISBN 0-201-55332-5, 1997.
3. D. Grossman and O. Frieder, Information Retrieval: Algorithms and Heuristics, Kluwer Academic Publishers, ISBN 0-7923-8271-4, 1998. Second Edition 2004 by Springer Publishers, ISBN 1-4020-3003-7 (hardcover), 1-4020-3004-5 (paperback).
4. O. Frieder, G. Frieder, and D. Grossman, Computer Science Programming Basics in Ruby, O'Reilly, ISBN 978-1-449-35597-5, 2013.

Journal Publications

1. O. Frieder and G. E. Herman, "Protocol Verification Using Database Technology," *IEEE Journal on Selected Areas in Communications*, 7(3), pp 324-334, April 1989.
2. C. K. Baru and O. Frieder, "Database Operations in a Cube-Connected Multicomputer System," *IEEE Transactions on Computers*, 38(6), pp 920-927, June 1989.
3. M. E. Segal and O. Frieder, "Dynamic Program Updating: Software Maintenance Technique for Minimizing Software Downtime," *Journal of Software Maintenance: Research and Practice*, Wiley Press, 1(1), pp 59-79, September 1989.
4. V. Mak, K. C. Lee, and O. Frieder, "Exploiting Parallelism in Pattern Matching: An Information Retrieval Application," *ACM Transactions on Information Systems*, 9(1), pp. 52-74, January 1991.

5. O. Frieder and M. E. Segal, "On Dynamically Updating a Computer Program: From Concept to Prototype," *Journal of Systems and Software*, Elsevier Science Publishing Co., North-Holland, 14(2), pp. 111-128, February 1991.
6. O. Frieder, "A Parallel Database-Driven Protocol Verification System Prototype," *Software Practice and Experience*, Wiley Press, 22(3), pp 245-264, March 1992.
7. M. R. Stytz and O. Frieder, "Dynamic Adaptive Surface Rendering Within a Distributed Memory Multiprocessor," *Journal of Systems and Software*, Elsevier Science Publishing Co., North-Holland, vol. 19, pp. 247-259, December 1992.
8. B. Kjell, W. A. Woods., and O. Frieder, "Discrimination of Authorship Using Visualization," *Information Processing and Management*, Pergamon Press, 30(1), pp. 141-150, January 1994.
9. O. Frieder and C. K. Baru, "Site Selection and Query Scheduling Policies for Multicomputer Database Systems," *IEEE Transactions on Knowledge and Data Engineering*, 6(4), pp. 609-619, August 1994.
10. F. Barlos and O. Frieder, "Join Workload Partitioning Under Uniform and Skewed Input Relations," *Parallel Processing Letters*, World Scientific Publishing Company, 4(1), pp. 95-104, August 1994.
11. K. Makki, N. Pissinou, and O. Frieder, "Efficient Solutions to Multicast Routing in Communication Networks," *ACM/Baltzer Mobile Networks and Applications (MONET)*, 1(2), October 1996.
12. D. A. Grossman, O. Frieder, D. O. Holmes, and D. C. Roberts, "Integrating Structured Data and Text: A Relational Approach," *Journal of the American Society of Information Science*, 48(2), February 1997.
13. O. Frieder and H. Siegelmann, "Document Allocation in Multiprocessor Information Retrieval Systems," *IEEE Transactions on Knowledge and Data Engineering*, 9(4), July/August 1997.
14. A. Ruocco and O. Frieder, "Clustering and Classification of Large Document Bases in a Parallel Environment," *Journal of the American Society of Information Science*, 48(10), October 1997.
15. S. Nastea, O. Frieder, and T. El-Ghazawi, "Load Balanced Sparse Matrix-Vector Multiplication on Parallel Computers," *Journal of Parallel and Distributed Computing*, 46(2), November 1997.
16. T. Yap, O. Frieder, and R. Martino, "Parallel Computation in Biological Sequence Analysis," *IEEE Transactions on Parallel and Distributed Systems*, 9(3), March 1998.
17. C. Lundquist, O. Frieder, D. Holmes, and D. Grossman, "A Parallel Relational Database Management System Approach to Relevance Feedback in Information Retrieval," *Journal of the American Society of Information Science*, 50(5), April 1999.
18. K. Fox, O. Frieder, M. Knepper, and E. Snowberg, "SENTINEL: A Multiple Engine Information Retrieval and Visualization System," *Journal of the American Society of Information Science*, 50(7), May 1999.
19. P-J. Wan, G. Calinescu, L. Liu, and O. Frieder, "Grooming of Arbitrary Traffic in SONET/WDM Rings," *IEEE J. of Selected Area on Communication*, 18(10), October 2000.
20. G. Calinescu, O. Frieder, and P-J. Wan, "Minimizing Electronic Line Terminals for Automatic Ring Protection in General WDM Optical Networks," *IEEE J. of Selected Area on Communication*, 20(1), January 2002.
21. A. Chowdhury, O. Frieder, and P-J. Wan, "On the Design, Development, Deployment, and Network Survivability Analysis of the Dynamic Routing System Protocol," *Journal of Supercomputing*, 21(3), March 2002.
22. A. Chowdhury, O. Frieder, D. Grossman, and M. McCabe, "Collection Statistics for Fast Duplicate Document Detection," *ACM Transactions on Information Systems (TOIS)*, 20(2), April 2002.
23. O. Frieder, F. Harary, and P-J. Wan, "A Radio Coloring of a Hypercube," *International Journal of Computer Mathematics*, Taylor & Francis Publisher, 79(6), May 2002.
24. M. Aljlal, O. Frieder, and D. Grossman, "On Bi-Directional English-Arabic Search," *Journal of the American Society of Information Science and Technology*, 53(13), November 2002.
25. P.-J. Wan, G. Calinescu, X.-Y. Li, and O. Frieder, "Minimum-Energy Broadcasting in Static Ad Hoc Wireless Networks," *ACM/Kluwer Wireless Networks (WINET)*, 8(6), November 2002.
26. V. Nguyen, P-J. Wan, and O. Frieder, "Channel Alternation and Rotation for Trisectorized Cellular Systems," *Journal of Telecommunication Systems*, 22(1), January/April 2003.
27. K. M. Alzoubi, X.-Y. Li, Y. Wang, P.-J. Wan, and O. Frieder, "Geometric Spanners for Wireless Ad-Hoc Networks," *IEEE Transactions on Parallel and Distributed Systems*, 14(4), April 2003.
28. X.-Y. Li, P.-J. Wan, and O. Frieder, "Coverage in Wireless Ad-Hoc Sensor Networks," *IEEE Transactions on Computers*, 52(6), June 2003.

29. P.-J. Wan, K. M. Alzoubi, and O. Frieder, "Distributed Construction of Connected Dominating Set in Wireless Ad Hoc Networks," *ACM/Kluwer Mobile Networks and Applications (MONET)*, 9(2), April 2004.
30. S. Beitzel, E. Jensen, A. Chowdhury, D. Grossman, O. Frieder, and N. Goharian, "On Fusion of Effective Retrieval Strategies in the Same Information Retrieval System", *Journal of the American Society of Information Science and Technology*, 55(10), July 2004.
31. X.-Y. Li, K. Moaveninejad, and O. Frieder, "Regional Gossip Routing for Wireless Ad Hoc Networks", *ACM/Kluwer Mobile Networks and Applications (MONET)*, 10(1-2), February 2005.
32. W.-Z. Song, Y. Wang, X.-Y. Li, and O. Frieder, "Localized Algorithms for Energy Efficient Topology in Wireless Ad Hoc Networks," *ACM/Springer Mobile Networks and Applications (MONET)*, 10(6), December 2005.
33. C.-W. Yi, P.-J. Wan, X.-Y. Li, and O. Frieder, "Asymptotic Distribution of the Number of Isolated Nodes in Wireless Ad Hoc Networks with Bernoulli Nodes," *IEEE Transactions on Communications*, 54(3), March 2006.
34. W.-Z. Song, X.-Y. Li, O. Frieder, and W. Wang, "Localized Topology Control for Unicast and Broadcast in Wireless Ad Hoc Networks," *IEEE Transactions on Parallel and Distributed Systems*, 17(4), April 2006.
35. S. Aqeel, S. Beitzel, E. Jensen, D. Grossman and O. Frieder, "On the Development of Name Search Techniques for Arabic," *Journal of the American Society of Information Science and Technology*, 57(6), April 2006.
36. E. Burger and O. Frieder, "A Novel System for Remote Control of Household Devices Using Digital IP Phones," *IEEE Transactions on Consumer Electronics*, 52(2), May 2006.
37. S. Beitzel, E. Jensen, A. Chowdhury, O. Frieder, and D. Grossman, "Temporal Analysis of a Very Large Topically Categorized Web Query Log," *Journal of the American Society of Information Science and Technology*, 58(2), January 2007.
38. E. Burger and O. Frieder, "Efficient Residential Consumer Device Interaction with Network Services," *IEEE Transactions on Consumer Electronics*, 53(1), February 2007.
39. S. Beitzel, E. Jensen, D. Lewis, A. Chowdhury, and O. Frieder "Automatic Classification of Web Queries Using Very Large Unlabeled Query Logs," *ACM Transactions on Information Systems*, 25(2), April 2007.
40. S. K. Agun and O. Frieder, "HAPI: Hardware Assisted Pruned Index System," *IEEE Transactions on Consumer Electronics*, 53(2), May 2007.
41. R. Cathey, E. Jensen, S. Beitzel, O. Frieder, and D. Grossman, "Exploiting Parallelism to Support Scalable Hierarchical Clustering," *Journal of the American Society of Information Science and Technology*, 58(8), June 2007.
42. E. Jensen, S. Beitzel, A. Chowdhury, and O. Frieder, "Repeatable Evaluation of Search Services in Dynamic Environments," *ACM Transactions on Information Systems*, 26(1), November 2007.
43. Y. Yu, S. Ren, and O. Frieder, "Interval-Based Timing Constraints: Their Satisfactions and Applications," *IEEE Transactions on Computers*, 57(3), March 2008.
44. R. Cathey, E. Jensen, S. Beitzel, D. Grossman, and O. Frieder, "Using a Relational Database for Scalable XML Search," *Journal of Supercomputing*, 44(2), May 2008.
45. J. Urbain, N. Goharian, and O. Frieder, "Probabilistic Passage Models for Semantic Search of Genomics Literature," *Journal of the American Society of Information Science and Technology*, 59(12), September 2008.
46. J. Urbain, O. Frieder, and N. Goharian, "A Dimensional Retrieval Model for Integrating Semantics and Statistical Evidence in Context for Genomics Literature Search," *Computers in Biology and Medicine*, 39(1), January 2009.
47. W. G. Yee, L. Nguyen, and O. Frieder, "A View of the Data on P2P File-sharing Systems," *Journal of the American Society of Information Science and Technology*, 60(10), October 2009.
48. Y. Yu, S. Ren, and O. Frieder, "Feasibility of Semiring-Based Timing Constraints," *ACM Transactions in Embedded Computing Systems*, 9(4), March 2010.
49. T. Obafemi-Ajayi, G. Agam, and O. Frieder, "Historical Document Enhancement Using LUT Classification," *International Journal on Document Analysis and Recognition (IJ DAR)*, 13(1), March 2010.
50. H. Alphas-Jackson, J. Cashy, O. Frieder, and A. Schaeffer, "Data Mining Derived Treatment Algorithms from the Electronic Medical Record Improve Theoretical Empirical Therapy for Outpatient Urinary Tract Infections," *The Journal of Urology*, vol. 186, December 2011.

51. Y. Merhav, F. Mesquita, D. Barbosa, W.-G. Yee, and O. Frieder, "Extracting Information Networks from the Blogosphere", *ACM Transaction on the Web*, 6(3), September 2012.
52. T. Obafemi-Ajayi, S. Kapoor, and O. Frieder, "Cluster-K⁺: Network Topology for Searching Replicated Data in P2P Systems", *Information Processing & Management*, 48(5), September 2012.
53. Y. Neuman, D. Assaf, Y. Cohen, M. Last, S. Argamon, N. Howard, and O. Frieder, "Metaphor Identification in Large Texts Corpora," *PLoS ONE*, 8(4): e62343. doi:10.1371/journal.pone.0062343, April 2013.
54. J. Freericks, B. Nikolic, and O. Frieder, "The Non-Equilibrium Quantum Many-Body Problem as a Paradigm for Extreme Data Science," *International Journal of Modern Physics B*, 28(31), December 2014.
55. J. Parker, A. Yates, N. Goharian, and O. Frieder, "Health Related Hypothesis Generation using Social Media Data," *Social Network Analysis and Mining*, 5(7), March 2015.
56. J. Soo and O. Frieder, "On Searching Misspelled Collections," *Journal of the Association for Information Science and Technology*, 66(6), June 2015 (Brief Communication).
57. L. Soldaini, A. Yates, E. Yom-Tov, O. Frieder, and N. Goharian, "Enhancing Web Search in the Medical Domain via Query Clarification," *Information Retrieval Journal*, 19(1), April 2016.
58. D. Hartley, C. Giannini, S. Wilson, O. Frieder, et al. "Coughing, Sneezing, and Aching Online: Twitter and the Volume of Influenza-like Illness in a Pediatric Hospital," *PLOS ONE*, 12(7), July 2017.
59. D.-C. Chang, O. Frieder, and H.-R. Yao, "On Bochner Theorem and its Application to Graph Kernels," *Journal of Nonlinear and Convex Analysis*, 19(12), December 2018.
60. S. MacAvaney, A. Yates, A. Cohan, L. Soldaini, K. Hui, N. Goharian, and O. Frieder, "Overcoming Low-Utility Facets for Complex Answer Retrieval," *Information Retrieval Journal*, 22(3-4), August 2019.
61. S. MacAvaney, H.-R. Yao, E. Yang, K. Russell, N. Goharian, and O. Frieder, "Hate speech detection: Challenges and Solutions," *PLOS ONE*, August 2019.
62. I. Mele, N. Tonello, O. Frieder, and R. Perego, "Topical Result Caching in Web Search Engines" *Information Processing & Management*, 57(3), May 2020

Journal Publications Selected from Conferences

63. W. A. Woods, H. D. Moser, O. Frieder, and P. Kantor, "A Simulation Evaluation of Task Scheduling on Reconfigurable Multicomputer Architectures," *Computer Systems: Science and Engineering*, CRL Publishing, 10(4), pp. 244-254, October 1995.
64. A. Chowdhury, O. Frieder, E. Burger, D. Grossman, and K. Makki, "Dynamic Routing System (DRS): Fault Tolerance in Network Routing," *Computer Networks and ISDN*, Elsevier Science Publishing Co., North-Holland, 31(1-2), January 1999.
65. B. Willard and O. Frieder, "Autonomous Garbage Collection: Resolving Memory Leaks In Long Running Server Applications," *Computer Communications*, Elsevier Science Publishing Co., North-Holland, 23(10), May 2000.
66. K. M. Alzoubi, P.-J. Wan, and O. Frieder, "Distributed Heuristics for Connected Dominating Set in Wireless Ad Hoc Networks", *IEEE ComSoc/KICS Journal of Communications and Networks*, Special Issue on Innovations in Ad Hoc Mobile Pervasive Networks, 4(1), March 2002.
67. P.-J. Wan, L. Liu, and O. Frieder, "Wavelength Assignment to Minimize Requirement on Tunable Range of Optical Transceivers in WDM Networks," *Computer Communications*, Elsevier Science Publishing Co., North-Holland, 26(7), May 2003.
68. P.-J. Wan, O. Frieder, and L. Liu, "Optimal Placement of Wavelength Converters in Trees, Tree-Connected Rings, and Tree of Rings," *Computer Communications*, Elsevier Science Publishing Co., North-Holland, 26(7), May 2003.
69. D. Jia, W. G. Yee, L. Nguyen, and O. Frieder, "Distributed, Automatic File Description Tuning in P2P File-Sharing Systems," *Peer-to-Peer Networking and Applications*, 1(2), September 2008.
70. J. Urbain, O. Frieder, and N. Goharian, "Passage Relevance Models for Genomic Search" *BMC Bioinformatics*, 10(S3), March 2009.

General Readership Magazine/Survey Articles

71. O. Frieder, "Multiprocessor Algorithms for Relational Database Operators on Hypercube Systems," *IEEE Computer*, 23(11), pp. 13-29, November 1990.
72. M. R. Stytyz, G. Frieder, and O. Frieder, "Three Dimensional Medical Imaging: Algorithms and Computer Systems," *ACM Computing Surveys*, 23(4), pp. 421-499, December 1991.
73. O. Frieder, V. A. Topkar, R. K. Karne, and A. K. Sood, "Experimentation With Hypercube Database Engines," *IEEE Micro*, 12(1), pp. 42-56, February 1992.
74. L. Allen and O. Frieder, "Exploiting Database Technology in Medical Arenas: A Critical Assessment of PACS," *IEEE Engineering in Medicine and Biology*, 11(1), pp. 42-50, March 1992.
75. M. E. Segal and O. Frieder, "On-the-Fly Modification of Running Programs: An Introduction to Dynamic Program Updating Systems," *IEEE Software*, 10(2), pp. 53-65, March 1993.
76. D. Grossman, C. J. Staton, B. Bailey, M. C. McCabe, O. Frieder, and D. Roberts, "Applications-Level Performance Testing: A Case Study of a Large Finance Application," *IEEE Software*, September 1996.
77. D. Grossman, S. Beitzel, E. Jensen, and O. Frieder, "IIT Intranet Mediator: Bringing Data Together on a Corporate Intranet," *IEEE IT PRO*, January/February 2002.
78. P. Bernhard, G. Faulkner, and O. Frieder, "XML Strategies for Legacy Database Search," *IEEE IT PRO*, March/April 2003.

Conference Publications

79. C. K. Baru and O. Frieder, "Implementing Relational Database Operations in a Cube-Connected Multicomputer," *IEEE Third Conference on Data Engineering*, Los Angeles, California, February 1987.
80. O. Frieder and C. K. Baru, "Data Distribution and Query Scheduling Policies for a Cube-Connected Multicomputer System," *Second Supercomputing Conference*, Santa Clara, California, May 1987.
81. O. Frieder and C. K. Baru, "Query Scheduling and Site Selection Algorithms for a Cube-Connected Multicomputer System," *IEEE Eighth International Conference on Distributed Computing Systems (ICDCS)*, San Jose, California, June 1988.
82. M. E. Segal and O. Frieder, "Dynamic Program Updating in a Distributed Computer System," *IEEE Conference on Software Maintenance*, Phoenix, Arizona, October 1988.
83. K. C. Lee, O. Frieder, and V. Mak, "JAS: A Parallel VLSI Architecture for Unformatted Data Processing," *ACM/IEEE Symposium on Databases in Parallel and Distributed Systems*, Austin, Texas, December 1988.
84. M. E. Segal and O. Frieder, "Dynamically Updating Distributed Software: Supporting Change in Uncertain and Mistrustful Environments," *IEEE Conference on Software Maintenance*, Miami, Florida, October 1989.
85. N. Asokan, S. Ranka, and O. Frieder, "A Parallel Free-text Search System with Indexing," *Proceedings of the IEEE Conference on Parallel Architectures and Databases*, Miami Beach, Florida, March 1990.
86. O. Frieder and M. R. Stytyz, "Dynamic Detection of Hidden Surface Within a MIMD Architecture," *IEEE Third Symposium on Computer-Based Medical Systems*, Chapel Hill, North Carolina, June 1990.
87. O. Frieder and H. Siegelmann, "On the Allocation of Documents in Information Retrieval Systems," *ACM Fourteenth Conference on Research and Development in Information Retrieval (SIGIR)*, Chicago, Illinois, October 1991.
88. D. Leon-Guerrero and O. Frieder, "On Systems Integration: Tuning the Performance of a Commercial TCP Implementation," *ACM Second Conference on Systems Integration*, Morristown, NJ, June 1992.
89. F. Barlos and O. Frieder, "On the Development of a Site Selection Optimizer for Distributed and Parallel Database Systems," *ACM Second Conference on Information and Knowledge Management (CIKM)*, Washington, DC, November 1993.
90. K. Park, O. Frieder, and A. Sood, "A Parallel Solution for the Multiprocessor Document Allocation Problem," *International Conference on Parallel Processing (ICPP)*, St. Charles, Illinois, August 1994.
91. W. A. Woods, H. D. Moser, O. Frieder, and P. Kantor, "A Case for Reconfigurable Parallel Architectures for Information Retrieval," *ACM Third Conference on Information and Knowledge Management (CIKM)*, Gaithersburg, Maryland, November 1994. (*Selected for Journal Special Issue*)
92. T. K. Yap, P. J. Munson, O. Frieder, and R. L. Martino, "Parallel Multiple Sequence Alignment Using Speculative Computation", *Proceedings of the International Conference on Parallel Processing (ICPP)*, August, 1995.

93. K. Makki, N. Pissinou, and O. Frieder, "On Multicasting in a Communication Network," *IEEE Fourth Conf. on Computer & Communications Networks (IC3N)*, Las Vegas, Nevada, October 1995. **(Best Paper Award)**
94. S. Nastea, O. Frieder, and T. El-Ghazawi. "Load-Balanced Sparse Matrix-Vector Multiplication on Parallel Computers," *IEEE Symposium on Parallel and Distributed Processing (SPDP'96)*, New Orleans, LA, October 1996.
95. Chowdhury, D. Grossman, O. Frieder, and E. Burger, "DRS: A Fault Tolerant Network Routing System For Mission Critical Distributed Applications," *IEEE Sixth International Conference on Computer & Communications Networks (IC3N)*, Las Vegas, Nevada, September 1997. *(Selected for Journal Special Issue)*
96. C. Lundquist, D. Grossman, and O. Frieder, "Improving Relevance Feedback in the Vector-Space Model," *ACM Sixth Conference on Information and Knowledge Management (CIKM)*, Las Vegas, Nevada, November 1997.
97. B. Willard and O. Frieder, "Autonomous Garbage Collection: Resolving Memory Leaks In Long Running Network Applications," *IEEE Seventh International Conference on Computer & Communications Networks (IC3N)*, Lafayette, Louisiana, October 1998. *(Selected for Journal Special Issue)*
98. P. - J. Wan, L.-W. Liu, and O. Frieder, "Optimal Placement of Wavelength Converters in Trees and Trees of Rings," *IEEE Eighth International Conference on Computer & Communications Networks (IC3N)*, Boston, Massachusetts, October 1999. *(Selected for Journal Special Issue)*
99. L.-W. Liu, P.-J. Wan, and O. Frieder, "Wavelength Assignment to Minimize Requirement on Tunable Range of Optical Transceivers in WDM Networks," *IEEE Eighth International Conference on Computer & Communications Networks (IC3N)*, Boston, Massachusetts, October 1999. *(Selected for Journal Special Issue)*
100. M.C. McCabe, A. Chowdhury, D. Grossman, and O. Frieder, "A Unified Environment for Fusion of Information Retrieval Approaches," *ACM Eighth Conference on Information and Knowledge Management (CIKM)*, Kansas City, Missouri, November 1999.
101. L.-W. Liu, X.-Y. Li, P.-J. Wan, and O. Frieder, "Wavelength Assignment in WDM Rings to Minimize SONET ADMs," *IEEE INFOCOM 2000*, Tel Aviv, Israel, March 2000.
102. M. C. McCabe, J. Lee, A. Chowdhury, D. Grossman, and O. Frieder, "On the Design and Evaluation of a Multi-Dimensional Approach to Information Retrieval," *ACM Twenty-Third Conference on Research and Development in Information Retrieval (SIGIR)*, Athens, Greece, July 2000. (poster paper)
103. P.-J. Wan, G. Calinescu, X.-Y. Li, and O. Frieder, "Minimum Energy Broadcast Routing in Static Ad Hoc Wireless Networks," *IEEE INFOCOM 2001*, Anchorage, Alaska, April 2001.
104. K. Goda, T. Tamura, M. Kitsuregawa, A. Chowdhury, and O. Frieder, "Query Optimization for Vector Space Problems," *ACM Twenty-Fourth Conference on Research and Development in Information Retrieval (SIGIR)*, New Orleans, Louisiana, September 2001. (poster paper)
105. Chowdhury, O. Frieder, D. Grossman, and M. C. McCabe, "Analyses of Multiple-Evidence Combinations for Retrieval Strategies," *ACM Twenty-Fourth Conference on Research and Development in Information Retrieval (SIGIR)*, New Orleans, Louisiana, September 2001. (poster paper)
106. M. Aljlal and O. Frieder, "Effective Arabic-English Cross-Language Information Retrieval via Machine Readable Dictionaries and Machine Translation," *ACM Tenth Conference on Information and Knowledge Management (CIKM)*, Atlanta, Georgia, November 2001.
107. X.-Y. Li, P.-J. Wan, Y. Wang, and O. Frieder, "Sparse Power Efficient Topology for Wireless Networks", *Thirty-Fifth Hawaii Int'l Conf. on Systems Sciences*, Hawaii, Hawaii, January 2002. **(Best Paper Award)**
108. K. Alzoubi, P.-J. Wan, and O. Frieder, "New Distributed Algorithm for Connected Dominating Set in Wireless Ad hoc Networks," *Thirty-Fifth Hawaii Int'l Conf. on Systems Sciences*, Hawaii, Hawaii, January 2002. *(Selected for Journal Special Issue)*
109. X.-Y. Li, P.-J. Wan, and O. Frieder, "Coverage in Wireless Ad-hoc Sensor Networks," *IEEE Int'l Conf. on Communications (ICC 2002)*, New York, New York, April 2002.
110. P.-J. Wan, K. Alzoubi, and O. Frieder, "Distributed Construction of Connected Dominating Set in Wireless Ad Hoc Networks," *IEEE Twenty-First INFOCOM 2002*, New York, New York, June 2002.
111. K. Alzoubi, P.-J. Wan, and O. Frieder, "Message-Optimal Connected-Dominating-Set Construction for Routing in Mobile Ad Hoc Networks," *ACM MobiHoc*, Lausanne, Switzerland, June 2002.

112. Chowdhury, M. C. McCabe, D. Grossman, and O. Frieder, "Document Normalization Revisited," *ACM Twenty-Fifth Conference on Research and Development in Information Retrieval (SIGIR)*, Tampere, Finland, August 2002. (poster paper)
113. M. Aljlal and O. Frieder, "On Arabic Search: Improving the Retrieval Effectiveness via a Light Stemming Approach," *ACM Eleventh Conference on Information and Knowledge Management (CIKM)*, Washington, DC, November 2002.
114. E. Jensen, S. Beitzel, A. Pilotto, N. Goharian, and O. Frieder, "Parallelizing the Buckshot Algorithm for Efficient Document Clustering," *ACM Eleventh Conference on Information and Knowledge Management (CIKM)*, Washington, DC, November 2002.
115. S. Beitzel, E. Jensen, A. Chowdhury, O. Frieder, D. Grossman, and N. Goharian, "Disproving the Fusion Hypothesis: An Analysis of Data Fusion via Effective Information Retrieval Strategies," *ACM Eighteenth Symposium on Applied Computing (SAC)*, Melbourne, Florida, March 2003.
116. K. Alzoubi, P.-J. Wan, and O. Frieder, "Maximal Independent Set, Weakly-Connected Dominating Set and Induced Spanners in Mobile Ad Hoc Networks," *IEEE 23rd International Conference on Distributed Computer Systems (ICDCS)*, Providence, Rhode Island, May 2003.
117. S. K. Agun and O. Frieder, "HAT: A Hardware Assisted Top-Doc Inverted Index Component," *ACM Twenty-Sixth Conference on Research and Development in Information Retrieval (SIGIR)*, Toronto, Ontario, Canada, July 2003. (short paper)
118. S. Beitzel, E. Jensen, A. Chowdhury, D. Grossman, and O. Frieder, "Using Manually-built Web Directories for Automatic Evaluation of Known-Item Retrieval," *ACM Twenty-Sixth Conference on Research and Development in Information Retrieval (SIGIR)*, Toronto, Ontario, Canada, July 2003. (short paper)
119. X-Y Li, Y. Wang, P.-J. Wan, W.-Z. Song, and O. Frieder, "Localized Low Weight Graph and Its Applications in Wireless Ad Hoc Networks," *Twenty-Third IEEE INFOCOM 2004*, Hong Kong, China, March 2004.
120. W.-Z. Song, Y. Wang, X.-Y. Li, O. Frieder, "Localized Algorithms for Energy Efficient Topology in Wireless Ad Hoc Networks," *Fifth ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc'04)*, Tokyo, Japan, May 2004.
121. S. Beitzel, E. Jensen, A. Chowdhury, D. Grossman, and O. Frieder, "Hourly Analysis of a Very Large Topically Categorized Web Query Log," *ACM Twenty-Seventh Conference on Research and Development in Information Retrieval (SIGIR)*, Sheffield, United Kingdom, July 2004.
122. S. Beitzel, E. Jensen, A. Chowdhury, D. Grossman, and O. Frieder, "Evaluation of Filtering Current News Search Results," *ACM Twenty-Seventh Conference on Research and Development in Information Retrieval (SIGIR)*, Sheffield, United Kingdom, July 2004. (short paper)
123. W. G. Yee and O. Frieder, "On Search in Peer-to-Peer File Sharing Systems," *ACM Twentieth Symposium on Applied Computing (SAC)*, Santa Fe, New Mexico, March 2005.
124. S. Beitzel, E. Jensen, O. Frieder, and A. Chowdhury, "A Framework for Determining Necessary Query Set Sizes to Evaluate Web Search Effectiveness," *WWW 2005*, Chiba, Japan, May 2005.
125. S. Beitzel, E. Jensen, O. Frieder, A. Chowdhury, and G. Pass, "Surrogate Scoring for Improved Metasearch Precision," *ACM Twenty-Eighth Conference on Research and Development in Information Retrieval (SIGIR)*, Salvador, Brazil, August 2005. (short paper)
126. S. Beitzel, E. Jensen, O. Frieder, D. Grossman, D. D. Lewis, A. Chowdhury, and A. Kolcz, "Automatic Web Query Classification Using Labeled and Unlabeled Training Data," *ACM Twenty-Eighth Conference on Research and Development in Information Retrieval (SIGIR)*, Salvador, Brazil, August 2005. (short paper)
127. E. Jensen, S. Beitzel, D. Grossman, O. Frieder, and A. Chowdhury, "Predicting Query Difficulty on the Web by Learning Visual Clues," *ACM Twenty-Eighth Conference on Research and Development in Information Retrieval (SIGIR)*, Salvador, Brazil, August 2005. (short paper)
128. W-G Yee, D. Jia, and O. Frieder, "Finding Rare Data Objects in P2P File-Sharing Systems," *IEEE Fifth International Conference on Peer-to-Peer Computing (P2P)*, Konstanz, Germany, August 2005.
129. F. Liu, S. Liu, C. Yu, W. Meng, O. Frieder, and D. Grossman, "Database Selection in Intranet Mediators for Natural Language Queries," *ACM Fourteenth Conference on Information and Knowledge Management (CIKM)*, Bremen, Germany, November 2005. (short paper)

130. S. Beitzel, E. Jensen, D. Lewis, A. Chowdhury, A. Kolcz, and O. Frieder, "Improving Automatic Query Classification via Semi-supervised Learning," *Fifth IEEE International Conference on Data Mining*, Houston, Texas, November 2005.
131. S. Srihari, S. Shetty, S. Chen, H. Srinivasan, C. Huang, G. Agam, and O. Frieder, "Document Image Retrieval using Signatures as Queries," *Second IEEE International Conference on Document Image Analysis for Libraries (DIAL)*, Lyon, France, April 2006.
132. E. Jensen, S. Beitzel, A. Chowdhury, and O. Frieder, "Query Phrase Suggestion from Topically Tagged Session Logs," *Seventh International Conference on Flexible Query Answering Systems (FQAS 2006)*, Lecture Notes in Artificial Intelligence (LNAI), Springer-Verlag, Milan, Italy, June 2006.
133. J. Heard, J. Wilberding, G. Frieder, O. Frieder, D. Grossman, and L. Kane, "On a Mediated Search of the United States Holocaust Memorial Museum Data," *Sixth Next Generation Information Technology Systems (NGITS)*, Sefayim, Israel, July 2006.
134. W. G. Yee, L. Nguyen, and O. Frieder, "Improved Result Ranking in P2P File-Sharing Systems by Probing for Meta-data," *IEEE Fifth International Symposium on Network Computing and Applications (NCA)*, Cambridge, Massachusetts, July 2006.
135. S. Stein, S. Argamon, and O. Frieder, "The Effect of OCR on Stylistic Text Classification," *ACM Twenty-Ninth Conference on Research and Development in Information Retrieval (SIGIR)*, Seattle, Washington, August 2006. (short paper)
136. S. Argamon, G. Agam, O. Frieder, D. Grossman, D. Lewis, G. Sohn, and K. Voorhees, "A Complex Document Information Processing Prototype," *ACM Twenty-Ninth Conference on Research and Development in Information Retrieval (SIGIR)*, Seattle, Washington, August 2006. (short paper)
137. D. Lewis, G. Agam, S. Argamon, O. Frieder, D. Grossman, and J. Heard, "Building a Test Collection for Complex Document Information Processing," *ACM Twenty-Ninth Conference on Research and Development in Information Retrieval (SIGIR)*, Seattle, Washington, August 2006. (short paper)
138. W. G. Yee, L. Nguyen, and O. Frieder, "Conjunction Dysfunction: The Weakness of Conjunctive Queries in Peer-to-Peer File-sharing Systems," *IEEE Sixth International Conference on Peer-to-Peer Computing (P2P)*, Cambridge, England, September 2006.
139. W.-Z. Wang and X.-Y. Li, O. Frieder, Y. Wang, and W.-Z. Song, "Efficient Interference-Aware TDMA Link Scheduling for Static Wireless Networks," *ACM Twelfth Conference on Mobile Computing and Networking (MobiCom)*, Los Angeles, California, September 2006.
140. Y. Yu, S. Ren, and O. Frieder, "Prediction of Timing Constraint Violation for Real-Time Embedded Systems with Known Transient Hardware Fault Distribution Model," *IEEE Twenty-Seventh Real-Time Systems Symposium (RTSS 2006)*, Rio de Janeiro, Brazil, December 2006.
141. G. Agam, G. Bal, G. Frieder, and O. Frieder, "Degraded Document Image Enhancement," *Document Recognition and Retrieval XIV (Part of the IS&T/SPIE International Symposium on Electronic Imaging)*, San Jose, California, January 2007.
142. G. Agam, S. Argamon, O. Frieder, D. Grossman, and D. Lewis, "Content-Based Document Image Retrieval in Complex Document Collections," *Document Recognition and Retrieval XIV (Part of the IS&T/SPIE International Symposium on Electronic Imaging)*, San Jose, California, January 2007.
143. W. G. Yee, L. Nguyen, and O. Frieder, "Masked Queries for Search Accuracy in Peer-to-Peer File-sharing Systems," *IEEE/ACM Twenty-First International Parallel & Distributed Processing Symposium (IPDPS)*, Long Beach, California, March 2007.
144. S. Beitzel, E. Jensen, A. Chowdhury, and O. Frieder, "Varying Approaches to Topical Web Query Classification," *ACM Thirtieth Conference on Research and Development in Information Retrieval (SIGIR)*, Amsterdam, Netherlands, July 2007. (short paper)
145. L. Nguyen, D. Jia, W. G. Yee, and O. Frieder, "Analysis of Query Logs in Gnutella Peer-to-Peer Network," *ACM Thirtieth Conference on Research and Development in Information Retrieval (SIGIR)*, Amsterdam, Netherlands, July 2007. (short paper)
146. X.-Y. Li, S.-J. Tang, and O. Frieder, "Multicast Capacity for Wireless Networks," *ACM Thirteenth Annual International Conference on Mobile Computing and Networking (MobiCom)*, Montreal, QC, Canada, September 2007.
147. D. Jia, W. G. Yee, L. Nguyen, and O. Frieder, "Distributed, Automatic File Descriptor Tuning in Peer-to-Peer File-Sharing Systems," *IEEE Seventh International Conference on Peer-to-Peer Computing (P2P)*, Galway, Ireland, September 2007.

148. J. Urbain, N. Goharian, and O. Frieder, "Combining Semantics, Context, and Statistical Evidence in Genomics Literature Search," *IEEE Seventh Symposium on BioInformatics & BioEngineering (BIBE)*, Boston Massachusetts, October 2007.
149. G. Bal, G. Agam, O. Frieder, and G. Frieder, "Interactive Degraded Document Enhancement and Ground Truth Generation," *Document Recognition and Retrieval XV (Part of the IS&T/SPIE International Symposium on Electronic Imaging)*, San Jose, California, January 2008.
150. T. Obafemi-Ajayi, G. Agam, and O. Frieder, "Ensemble LUT Classification for Degraded Document Enhancement," *Document Recognition and Retrieval XV (Part of the IS&T/SPIE International Symposium on Electronic Imaging)*, San Jose, California, January 2008.
151. Y. Merhav and O. Frieder, "On Filtering Irrelevant Results in Peer-to-Peer Search," *Twenty-Third ACM Symposium on Applied Computing (SAC)*, Fortaleza, Brazil, March 2008. (short paper)
152. S. Beitzel, E. Jensen, A. Chowdhury, and O. Frieder, "Analysis of Varying Approaches to Topical Web Query Classification," *ACM/ICST Third International Conference on Scalable Information Systems (INFOSCALE)*, Naples, Italy, June 2008.
153. W. G. Yee, L. Nguyen, D. Jia, and O. Frieder, "Efficient Query Routing by Improved Peer Description in P2P Networks," *ACM/ICST Third International Conference on Scalable Information Systems (INFOSCALE)*, Naples, Italy, June 2008. **(Best Paper Award)**
154. Y. Merhav and O. Frieder, "On Multiword Entity Ranking in Peer-to-Peer Search," *ACM Thirty-First Conference on Research and Development in Information Retrieval (SIGIR)*, Singapore, July 2008. (short paper)
155. L. Nguyen, W. G. Yee, and O. Frieder, "Query Workload Driven Summarization for P2P Query Routing," *IEEE Eighth International Conference on Peer-to-Peer Computing (P2P)*, Aachen, Germany, September 2008.
156. J. Urbain, O. Frieder, and N. Goharian, "Passage Relevance Models for Genomics Search," *ACM Seventeenth Conference on Information and Knowledge Management (CIKM)*, Napa Valley, California, October 2008. (short paper)
157. J. Soo, R. Cathey, O. Frieder, M. Amir, and G. Frieder, "Yizkor Books: A Voice for the Silent Past," *ACM Seventeenth Conference on Information and Knowledge Management (CIKM) – Industrial Track*, Napa Valley, California, October 2008. (short paper)
158. D. Jia, W. G. Yee, and O. Frieder, "Spam Characterization and Detection in Peer-to-Peer File-Sharing Systems," *ACM Seventeenth Conference on Information and Knowledge Management (CIKM)*, Napa Valley, California, October 2008.
159. L. Nguyen, W. G. Yee, and O. Frieder, "Adaptive Distributed Indexing for Structured Peer-to-Peer Networks," *ACM Seventeenth Conference on Information and Knowledge Management (CIKM)*, Napa Valley, California, October 2008.
160. T. Obafemi-Ajayi, G. Agam, and O. Frieder, "Efficient MRF Approach to Document Image Enhancement," *IAPR 19th International Conference on Pattern Recognition (ICPR)*, Tampa, Florida, December 2008.
161. S. Liu, Y. Mehrav, W. G. Yee, N. Goharian, and O. Frieder, "A Sentence Level Probabilistic Model for Evolutionary Theme Pattern Mining for News Corpora," *ACM Twenty-Fourth Symposium on Applied Computing (SAC)*, Honolulu, Hawaii, March 2009.
162. W. G. Yee, L. Nguyen, and O. Frieder, "Alternatives to Conjunctive Query Processing in Peer-to-Peer File Sharing Systems," *ACM Twenty-Fourth Symposium on Applied Computing (SAC)*, Honolulu, Hawaii, March 2009.
163. T. Obafemi-Ajayi, G. Agam, and O. Frieder, "Learning Shape Features for Document Enhancement," *Document Recognition and Retrieval XVII (Part of the IS&T/SPIE International Symposium on Electronic Imaging)*, San Jose, California, January 2010.
164. T. Obafemi-Ajayi, G. Agam, and O. Frieder, "Evaluation of Human Perception of Degradation of Document Images," *Document Recognition and Retrieval XVII (Part of the IS&T/SPIE International Symposium on Electronic Imaging)*, San Jose, California, January 2010.
165. N. Goharian, O. Frieder, W. G. Yee, and J. Mundrawala, "Enriching Peer-to-Peer File Descriptors using Association Rules on Query Logs," *ACM Thirty-Second European Conference on Information Retrieval (ECIR)*, Milton Keynes, United Kingdom, March 2010 (short paper).
166. J. Soo and O. Frieder, "On Foreign Name Search," *ACM Thirty-Second European Conference on Information Retrieval (ECIR)*, Milton Keynes, United Kingdom, March 2010.

167. W. G. Yee, L. Nguyen, and O. Frieder, "Improving Conjunctive Query Routing in P2P Unstructured Networks," *IEEE Ninth Symposium on Network Computing & Applications (NCA)*, Boston, Massachusetts, July 2010.
168. Y. Merhav, Filipe Mesquita, Denilson Barbosa, Wai Gen Yee, and O. Frieder, "Incorporating Global Information into Named Entity Recognition Systems using Relational Context," *ACM Thirty-Third Conference on Research and Development in Information Retrieval (SIGIR)*, Geneva, Switzerland, July 2010. (short paper)
169. H. Vahabi, F.-M. Nardini, F. Silvestri, O. Frieder and P. Vahabi, "On Tag Spell Checking," *Seventeenth International String Processing and Information Retrieval Symposium (SPIRE)*, Los Cabos, Mexico, October 2010. (short paper)
170. D. Broccolo, F.-M. Nardini, R. Perego, F. Silvestri, and O. Frieder, "Incremental Algorithms for Effective and Efficient Query Recommendation" *Seventeenth International String Processing and Information Retrieval Symposium (SPIRE)*, Los Cabos, Mexico, October 2010.
171. L. Nguyen, W. G. Yee, R. Liew, and O. Frieder, "Experiences with Using SVM-based Learning for Multi-objective Ranking," *ACM Nineteenth Conference on Information and Knowledge Management (CIKM)*, Toronto, Ontario, Canada, October 2010. (short paper)
172. P.-J. Wan, O. Frieder, X. Jia, F. Yao, X. Xu and S. Tang, "Wireless Link Scheduling under Physical Interference Model," *IEEE 30th International Conference on Computer Communications (INFOCOM)*, Shanghai, China, April 2011.
173. P.-J. Wan, M. Li, L. Wang, Z. Wang and O. Frieder, "Local Pooling Factor of Multihop Wireless Networks," *IEEE 30th–International Conference on Computer Communications (INFOCOM) – Mini-Conference*, Shanghai, China, April 2011.
174. F. Bonchi, O. Frieder, F. M. Nardini, F. Silvestri, and H. Vahabi, "Interactive and Context-Aware Tag Spell Check and Correction," *ACM Twenty-First Conference on Information and Knowledge Management (CIKM)*, Maui, Hawaii, October 2012. (short paper)
175. A. Teymorian, X. Qin, and O. Frieder, "RESQ: Rank-Energy Selective Query Forwarding for Distributed Search Systems," *ACM Twenty-First Conference on Information and Knowledge Management (CIKM)*, Maui, Hawaii, October 2012. (short paper)
176. P.-J. Wan, X. Jia, G. Dai, H. Du, Z. Wan, and O. Frieder, "Scalable Algorithms for Wireless Link Scheduling in Multi-Channel Multi-Radio Wireless Networks," *IEEE 32nd International Conference on Computer Communications (INFOCOM)*, Turin, Italy, April 2013.
177. D. Assaf, Y. Neuman, Y. Cohen, S. Argamon, N. Howard, M. Last, O. Frieder and M. Koppel, "Why 'Dark Thoughts' Aren't Really Dark: A Novel Algorithm for Metaphor Identification", *IEEE Fourth International Symposium Series on Computational Intelligence (SSCI-2013)*, Singapore, April 2013.
178. A. Yates, N. Goharian, and O. Frieder, "Graded Relevance Ranking for Synonym Discovery", *22nd International World Wide Web Conference (WWW)*, Rio de Janeiro, Brazil, May 2013. (poster paper)
179. L. Gandy, N. Allan, M. Atallah, O. Frieder, N. Howard, S. Kanareykin, M. Koppel, M. Last, Y. Neuman, and S. Argamon, "Automatic Identification of Conceptual Metaphors with Limited Knowledge," *Twenty-Seventh AAAI Conference on Artificial Intelligence (AAAI-13)*, Bellevue, Washington, July 2013.
180. J. Parker, G. Frieder, and O. Frieder, "Automatic Enhancement and Binarization of Degraded Document Images," *Twelfth International Conference on Document Analysis and Recognition (ICDAR)*, Washington, DC, August 2013.
181. J. Parker, Y. Wei, A. Yates, O. Frieder, and N. Goharian, "A Framework for Detecting Public Health Trends with Twitter," *Fifth IEEE/ACM International Conference on Social Networks Analysis and Mining (ASONAM)*, Niagara Falls, Ontario, Canada, August 2013.
182. E. Burger, H. Federoff, M. Fiandaca, O. Frieder, N. Goharian, and A. Yates, "Social Media Communications Networks and Pharmacovigilance: SequelAE-2.0," *Fifteenth IEEE International Conference on e-Health Networking, Applications and Services (Healthcom)*, Lisbon, Portugal, October 2013. (short paper)
183. A. Teymorian, O. Frieder, and M. Maloof, "Rank-Energy Selective Query Forwarding for Distributed Search Systems," *ACM Twenty-Second Conference on Information and Knowledge Management (CIKM)*, San Francisco, California, October 2013.
184. J. Parker, G. Frieder, and O. Frieder, "Robust Binarization of Degraded Document Images using Heuristics," *Document Recognition and Retrieval XXI (Part of the IS&T/SPIE International Symposium on Electronic Imaging)*, San Francisco, California, February 2014.

185. A. Yates, N. Goharian, and O. Frieder, "Relevance-Ranked Domain-Specific Synonym Discovery," *Thirty-Fifth European Conference on Information Retrieval (ECIR 2014)*, Amsterdam, Netherlands, April 2014.
186. P.-J. Wan, X. Jia, G.-J. Dai, H. Du, O. Frieder, "Fast and Simple Approximation Algorithms for Maximum Weighted Independent Set of Links," *IEEE Thirty-Third International Conference on Computer Communications (INFOCOM)*, Toronto, Ontario, Canada, April 2014.
187. A. Yates, J. Parker, N. Goharian, and O. Frieder, "A Framework for Public Health Surveillance," *Ninth Language Resources and Evaluation Conference (LREC-2014)*, Reykjavik, Iceland, May 2014.
188. P.-J. Wan, B. Xu, O. Frieder, S. Ji, B. Wang, and X. Xu, "Capacity Maximization in Wireless MIMO Networks with Receiver-Side Interference Suppression," *ACM 15th Mobile Ad Hoc Networking and Computing (MobiHoc)*. Philadelphia, PA, August 2014.
189. A. Cohan, L. Soldaini, A. Yates, N. Goharian, and O. Frieder, "On clinical decision support", Proceedings of the 5th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics, Newport Beach, CA, September 2014. (short paper)
190. A. Yates, N. Goharian, and O. Frieder, "Extracting Adverse Drug Reactions from Social Media," Twenty-Ninth AAAI Conference on Artificial Intelligence (AAAI), Austin, TX, January 2015.
191. P.J. Wan, B. Xu, L. Wang, S. Ji and O. Frieder, "A New Paradigm for Multiflow in Wireless Networks: Theory and Applications," *IEEE Thirty-Fourth International Conference on Computer Communications (INFOCOM)*, Hong Kong, China, April 2015.
192. P.J. Wan, F. Al-Dhelaan, S. Ji, L. Wang and O. Frieder, "Flow-Based Feasibility Test of Linear Interference Alignment with Arbitrary Interference Topology," *IEEE Thirty-Fourth International Conference on Computer Communications (INFOCOM)*, Hong Kong, China, April 2015.
193. L. Soldaini, A. Cohan, A. Yates, N. Goharian, O. Frieder, "Retrieving Medical Literature for Clinical Decision Support", *37th European Conference on Information Retrieval (ECIR)*, Vienna, Austria, April 2015.
194. J. Soo and O. Frieder, "Revisiting Known-Item Retrieval in Degraded Document Collections," *Document Recognition and Retrieval XXIII (Part of the IS&T/SPIE International Symposium on Electronic Imaging)*, San Francisco, California, February 2016.
195. J. Soo and O. Frieder, "Searching Corrupted Document Collections," *Twelfth IAPR Document Analysis Systems (DAS)*, Santorini, Greece, April 2016.
196. A. Yates, N. Goharian, and O. Frieder, "Learning the Relationships between Drug, Symptom, and Medical Condition Mentions in Social Media," *AAAI Tenth International Conference on Web and Social Media (ICWSM-16)*, Cologne, Germany, May 2016. (Short Paper)
197. A. Yates, A. Kolcz, N. Goharian, and O. Frieder, "Effects of Sampling on Twitter Trend Detection," *Tenth Language Resources and Evaluation Conference (LREC-2016)*, Portoroz, Slovenia, May 2016.
198. G. Coppersmith, C. Hilland, O. Frieder, and R. Leary, "Scalable Mental Health Analysis in the Clinical Whitespace Via Natural Language Processing," *IEEE Fourth International Conference on Biomedical and Health Informatics (BHI-2017)*, Orlando, Florida, February 2017. (Selected for Oral Presentation)
199. E. Yang, D. Grossman, O. Frieder, and R. Yurchak, "Effectiveness Results for Popular e-Discovery Algorithms," *AAAI Sixteenth International Conference on Artificial Intelligence and Law (ICAIL-2017)*, London, England, June 2017. (Short Paper)
200. S. MacAvaney, A. Yates, A. Cohan, L. Soldaini, K. Hui, N. Goharian, and O. Frieder, "Characterizing Question Facets from Complex Answer Retrieval", *ACM Forty-First Conference on Research and Development in Information Retrieval (SIGIR)*, Ann Arbor, Michigan, July 2018. (Short Paper)
201. E. Yang, D. Lewis, O. Frieder, D. Grossman, and R. Yurchak, "Retrieval and Richness when Querying by Document," *Design of Experimental Search & Information Retrieval Systems (DESIRES-2018)*, Bertinoro, Italy, August 2018.
202. M. Catena, O. Frieder and N. Tonello, "Efficient Energy Management in Distributed Web Search," *ACM Twenty-Seventh Conference on Information and Knowledge Management (CIKM)*, Turin, Italy, October 2018. (short paper)
203. H.R. Yao, D.-C. Chang, O. Frieder, W. Huang, and T.-S. Lee, "Graph Kernel Prediction of Drug Prescription," *IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI-2019)*, Chicago, Illinois, May 2019. (Selected for Oral Presentation)
204. E. Yang, D. Lewis, and O. Frieder, "A Regularization Approach to Combining Keywords and Training Data in Technology-Assisted Review," *AAAI Seventeenth International Conference on Artificial Intelligence and Law (ICAIL)*, Montreal, Quebec, Canada, June 2019.
205. S. MacAvaney, A. Yates, K. Hui, and O. Frieder, "Content-Based Weak Supervision for Ad-Hoc Re-Ranking", *ACM Forty-Second Conference on Research and Development in Information Retrieval (SIGIR)*, Paris, France, July 2019. (Short Paper)

206. E. Yang, D. Lewis, and O. Frieder, "Text Retrieval Priors for Bayesian Logistic Regression," *ACM Forty-Second Conference on Research and Development in Information Retrieval (SIGIR)*, Paris, France, July 2019. (Short Paper)
207. M. Catena, O. Frieder, C. Muntean, F.-M. Nardini, R. Perego and N. Tonello, "Enhanced News Retrieval: Passages Lead the Way!" *ACM Forty-Second Conference on Research and Development in Information Retrieval (SIGIR)*, Paris, France, July 2019. (Short Paper)
208. H.R. Yao, D.-C. Chang, O. Frieder, W. Huang, and T.-S. Lee, "Multiple Graph Kernel Fusion Prediction of Drug Prescription," *ACM Tenth Conference on Bioinformatics, Computational Biology, and Health Informatics (BCB)*, Niagara Falls, New York, September 2019.
209. C. Flagg and O. Frieder, "Searching Document Repositories using 3D Model Reconstruction," *ACM Nineteenth Symposium on Document Engineering (DocEng)*, Berlin, Germany, September 2019.
210. S. Agrawal, M. Clear, O. Frieder, S. Garg, A. O'Neill, and J. Thaler, "Ad Hoc Multi-Input Functional Encryption," *Eleventh Conference on the Innovations in Theoretical Computer Science (ITCS 2020)*, LIPIcs, Vol. 151, Seattle, Washington, January 2020.
211. C. Flagg, O. Frieder, S. MacAvaney, and G. Motamedi, "Streaming Gait Assessment for Parkinson's Disease", *Health Search and Data Mining Workshop*, Houston, Texas, February 2020.
212. I. Mele, C. Muntean, F.-M. Nardini, R. Perego N. Tonello, O. Frieder, and "Topic Propagation in Conversational Search" *ACM Forty-Third Conference on Research and Development in Information Retrieval (SIGIR)*, Xi'an, China, July 2020. (Short Paper)
213. S. MacAvaney, F.-M. Nardini, R. Perego N. Tonello, N. Goharian, and O. Frieder, "Expansion via Prediction of Importance with Contextualization" *ACM Forty-Third Conference on Research and Development in Information Retrieval (SIGIR)*, Xi'an, China, July 2020. (Short Paper)
214. S. MacAvaney, F.-M. Nardini, R. Perego N. Tonello, N. Goharian, and O. Frieder, "Efficient Document Re-Ranking for Transformers by Precomputing Term Representations" *ACM Forty-Third Conference on Research and Development in Information Retrieval (SIGIR)*, Xi'an, China, July 2020.
215. S. MacAvaney, F.-M. Nardini, R. Perego N. Tonello, N. Goharian, and O. Frieder, "Training Curricula for Open Domain Answer Re-Ranking" *ACM Forty-Third Conference on Research and Development in Information Retrieval (SIGIR)*, Xi'an, China, July 2020.

Chapters in Books

216. C. K. Baru, O. Frieder, D. Kandlur, and M. E. Segal, "Join on a Cube: Analysis, Simulation, and Implementation," in Database Machines and Knowledge Base Machines, edited by M. Kitsuregawa and H. Tanaka, Kluwer Academic Publishers, Boston, 1988.
217. H. T. Siegelmann and O. Frieder, "Document Allocation in Multiprocessor Information Retrieval Systems," in Advanced Database Systems, edited by N. R. Adam and B. K. Bhargava, LNCS-759, Springer Verlag, 1993.
218. F. Barlos, O. Frieder, and G. Frieder, "Query Optimization for Multiprocessor/Distributed Databases: A Statistical Approach," in Parallel Computing: Paradigms and Applications, edited by A. Zomaya, Chapman & Hall, London, 1996.
219. T. K. Yap, O. Frieder, and R. L. Martino, "Parallel Computation in Biomedicine: Genetic and Protein Sequence Analysis," in Handbook of Parallel and Distributed Computing, edited by A. Zomaya, McGraw-Hill, 1996.
220. T. El-Ghazawi, O. Frieder, J. Gaber, and S. Alaoui, "Parallel Task Mapping with Biological Computing Models," in Solutions to Parallel and Distributed Computing Problems: Lessons from Biological Sciences, edited by A. Zomaya, John Wiley & Sons, Canada, 2001.
221. S. Beitzel, E. Jensen, A. Chowdhury, D. Grossman, N. Goharian, and O. Frieder, "Recent Results on Fusion of Effective Retrieval Strategies in the Same Information Retrieval System," Distributed Multimedia Information Retrieval, edited by J. Callan, F. Crestani, and M. Sanderson, Springer-Verlag, LNCS-2924, 2003.
222. G. Calinescu, O. Frieder, P.-J. Wan, "A Survey on Algorithms for Power Assignment in Wireless Ad Hoc Networks," Handbook on Theoretical and Algorithmic Aspects of Sensor, Ad Hoc Wireless, and Peer-to-Peer Networks, edited by J. Wu, Auerbach Publishers, 2005.
223. O. Frieder, "On Searching in the "Real World", Computational Methods for Counterterrorism, edited by S. Argamon and N. Howard, Springer Verlag, 2009.

Encyclopedia Entries:

224. Encyclopedia of Algorithms (Springer, 2008)
- P.-J. Wan, X.-Y. Li, G. Calinescu, and O. Frieder, "Minimum Energy Broadcast in Wireless Networks"
225. Encyclopedia of Database Systems (Springer, 2009)
- A. Full Entries
- E. Jensen, S. Beitzel, and O. Frieder, "Effectiveness Involving Multiple Queries"
 - S. Beitzel, E. Jensen, and O. Frieder, "Index Creation and File Structures"
- B. Brief Entries
- S. Beitzel, E. Jensen, and O. Frieder, "Average Precision Histogram"
 - S. Beitzel, E. Jensen, and O. Frieder, "Average R-Precision"
 - S. Beitzel, E. Jensen, and O. Frieder, "Mean Average Precision (MAP)"
 - S. Beitzel, E. Jensen, and O. Frieder, "Geometric Mean Average Precision (GMAP)"

Invited Publications:

226. O. Frieder, K. C. Lee, and V. Mak, "JAS: A Parallel VLSI Architecture for Text Processing," *IEEE Database Engineering*, 8(1), March 1989.
227. A. Zomaya, T. El-Ghazawi, and O. Frieder, "Guest Editor's Introduction: Parallel and Distributed Computing for Data Mining," *IEEE Concurrency*, 7(4), October - December 1999.
228. O. Frieder, D. Grossman, A. Chowdhury, and G. Frieder, "Efficiency Considerations in Very Large Information Retrieval Servers," *Journal of Digital Information, (British Computer Society)*, 1(5), April 2000.
229. O. Frieder, A. Chowdhury, D. Grossman, M.C. McCabe. "On the Integration of Structured Data and Text: A Review of the SIRE Architecture." *DELOS Workshop on Information Seeking, Searching, and Querying in Digital Libraries*, Zurich, Switzerland, December 2000.
230. D. Grossman and O. Frieder, "Divide and Conquer," *Intelligent Enterprise*, 4(12), August 10, 2001.
231. D. Grossman and O. Frieder, "How to get that Unstructured Information into your Data Warehouse," *Intelligent Enterprise*, 4(14), September 18, 2001.
232. D. Grossman and O. Frieder, "How to get that Unstructured Information into your Data Warehouse, Continued," *Intelligent Enterprise*, 4(16), October 24, 2001.
233. O. Frieder, D. Grossman, and A. Chowdhury, "On Scalable Information Retrieval Systems," Paper Corresponding to Frieder Keynote Presentation, *IEEE Second International Symposium on Network Computing and Applications*, Cambridge, Massachusetts, April 2003.
234. G. Agam, S. Argamon, O. Frieder, D. Grossman, D. Lewis, "Complex Document Information Processing: Prototype, Test Collection, and Evaluation," Paper Corresponding to Frieder Invited Presentation, *Document Recognition and Retrieval XIII (Part of the IS&T/SPIE International Symposium on Electronic Imaging)*, San Jose, California, January 2006.
235. O. Frieder, "On Scalable (Computer Based) Information Systems," *ASIS&T Bulletin*, December/January 2008.

TREC Publications:

236. D. Grossman, D. Holmes, and O. Frieder, "A Parallel DBMS Approach to IR in TREC-3," *Overview of the Third Text Retrieval Conference (TREC-3)*, NIST Special Publication 500-225, November 1994.

237. D. Grossman, D. Holmes, O. Frieder, M Nguyen, and C. Kingsbury, "Improving Accuracy and Run-Time Performance for TREC-4," *Overview of the Fourth Text Retrieval Conference (TREC-4)*, NIST Special Publication 500-236, November 1995.
238. D. Grossman, J Reichart, A, Chowdhury, C. Lundquist, D. Holmes, and O. Frieder "Using Relevance Feedback within the Relational Model for TREC-5" *Overview of the Fifth Text Retrieval Conference (TREC-5)*, NIST Special Publication 500-238, November 1996.
239. C. Lundquist, D. Holmes, D. Grossman, O. Frieder, and M. C. McCabe, "Expanding Relevance Feedback in the Relational Model," *Overview of the Sixth Text Retrieval Conference (TREC-6)*, NIST Special Publication 500-240, November 1997.
240. D. Holmes, M. C. McCabe, D. Grossman, A. Chowdhury, and O. Frieder, "Use of Query Concepts and Information Extraction to Improve Information Retrieval Effectiveness," *Overview of the Seventh Text Retrieval Conference (TREC-7)*, NIST Special Publication 500-242, November 1998.
241. M. C. McCabe, D. Holmes, K. Alford, A. Chowdhury, D. Grossman, and O. Frieder, "IIT at TREC-8: Improving Baseline Precision," *Overview of the Eighth Text Retrieval Conference (TREC-8)*, NIST Special Publication 500-246, November 1999.
242. A. Chowdhury, S. Beitzel, E. Jensen, M. Sai-lee, D. Grossman, O. Frieder, M. C. McCabe, and D. Holmes, "IIT at TREC-9: Entity Based Feedback with Fusion," *Overview of the Ninth Text Retrieval Conference (TREC-9)*, NIST Special Publication 500-249, November 2000.
243. M. Aljlal, S. Beitzel, E. Jensen, A. Chowdhury, Holmes, M. Lee, D. Grossman, and O. Frieder, D. "IIT at TREC-10," *Overview of the Tenth Text Retrieval Conference (TREC-10)*, NIST Special Publication 500-250, November 2001.
244. A. Chowdhury, M. Aljlal, E. Jensen, S. Beitzel, D. Grossman, and O. Frieder, "IIT at TREC-2002: Linear Combinations Based on Document Structure and Varied Stemming for Arabic Retrieval," *Overview of the Eleventh Text Retrieval Conference (TREC-11)*, NIST Special Publication 500-251, November 2002.
245. S. Beitzel, E. Jensen, R. Cathey, L. Ma, D. Grossman, O. Frieder, A. Chowdhury, G. Pass, H. Vandermolten, "IIT at TREC-2003: Task Classification & Document Structure for Known-Item Search", *Overview of the Twelfth Text Retrieval Conference (TREC-12)*, NIST Special Publication 500-255, November 2003.
246. J. Heard, O. Frieder, and D. Grossman, "IIT at TREC 2004 Standard Retrieval Models Over Partitioned Indices for the Terabyte Track," *Overview of the Thirteenth Text Retrieval Conference (TREC-13)*, NIST Special Publication 500-261, November 2004.
247. J. Urbain, N. Goharian, and O. Frieder, "IIT TREC 2005: Genomics Track," *Overview of the Fourteenth Text Retrieval Conference (TREC-14)*, NIST Special Publication 500-266, November 2005.
248. J. Urbain, N. Goharian, and O. Frieder, "IIT TREC 2006: Genomics Track," *Overview of the Fifteenth Text Retrieval Conference (TREC-15)*, NIST Special Publication 500-272, November 2006.
249. J. Urbain, N. Goharian, and O. Frieder, "IIT TREC 2007 Genomics Track: Using Concept-Based Semantics in Context for Genomics Literature Passage Retrieval," *Overview of the Sixteenth Text Retrieval Conference (TREC-16)*, NIST Special Publication 500-274, November 2007.
250. A. Yates, D. DeBoer, H. Yang, N. Goharian, S. Kunath, and O. Frieder, "(Not Too) Personalized Learning to Rank for Contextual Suggestion", *Overview of the Twenty-First Text Retrieval Conference (TREC-21)*, NIST Special Publication 500-298, November 2012.
251. L. Soldaini, A. Cohan, A. Yates, N. Goharian, and O. Frieder, "Query Reformulation for Clinical Decision Support Search", *Overview of the Twenty-Third Text Retrieval Conference (TREC-23)*, NIST Special Publication 500-308, November 2014.
252. S. MacAvaney, A. Yates, N. Goharian, and O. Frieder, "PACRR Gated Expansion for TREC CAR 2018", *Overview of the Twenty-Seventh Text Retrieval Conference (TREC-27)*, NIST Special Publication 500-331, November 2018.

Selected List of Research Funding¹

1. "Multicomputer Relational Query Processing and its Application to Protocol Verification,"
Database and Communication Systems, Inc./Virginia Center for Innovative Technology
Principal Investigator (CCR-91-57785)
January 1, 1991 - June 30, 1992 \$ 37,093
2. "Parallel Verification Systems for Highly-Complex Communications Protocols,"
National Science Foundation
Principal Investigator
September 1, 1991 - February 28, 1994 \$ 54,998
3. "CISE Research Instrumentation:
Exploiting Mixed Performance Characteristics: A Heterogeneous Hypercube System,"
National Science Foundation (\$ 57,100) / George Mason University (\$ 28,550)
(Principal Investigator: A. K. Sood, Co-Principal Investigator: O. Frieder)
May 1, 1992 - October 31, 1993 \$ 85,650
4. "Network Design and Optimization,"
Telemarc, Inc./Virginia Center for Innovative Technology
Principal Investigator
February 10, 1993 - October 9, 1993 \$ 25,000
5. "1993 National Young Investigator Award,"
National Science Foundation
Principal Investigator
September 1, 1993 - February 28, 2000 \$ 312,500
6. "Educating Engineers to Design Complex Systems,"
National Science Foundation
(Principal Investigator: P. Denning, Co-Principal Investigators: C. Dede, O. Frieder,
J. Gentle, C. Jensen, M. Kafatos, D. Menasce', D. Rine, and J. Wallin)
October 1, 1993 - September 30, 1995 \$ 156,000
7. "High Performance Network Protocols and Information Retrieval Services,"
XPAND Corporation/Virginia Center for Innovative Technology
Principal Investigator
October 18, 1993 - October 31, 1994 \$ 38,839
8. "A Scientific and Technical Evaluation of EOSDIS Core System for Earth Science Research,"
Hughes Applied Information Systems (HAIS)
(Principal Investigator: M. Kafatos, Co-Principal Investigators: O. Frieder, L. Kerschberg,
G. Michaels, B. Moore, D. Menasce', J. Shukla, and F. Webster)
March 1, 1994 - August 31, 1994 \$ 329,022
9. "Research Opportunity Award: Parallelism in Information Retrieval,"
National Science Foundation
Principal Investigator
August 1, 1994 - July 31, 1995 \$ 8,015

¹ I did not pursue any funding prior to September 1990 since funding requests were forbidden at Bellcore.

10.	"Implementing Relevance Ranking Using Logicon's LMDS," Logicon Operating Systems Principal Investigator October 12, 1994 - October 31, 1995	\$ 39,615
11.	The Telephone Connection, Inc. Principal Investigator	\$ 85,633
	A. "High Transaction Volume Telecommunications Databases," November 1, 1994 - October 31, 1995	\$ 26,730
	B. "High Volume Call Processing," July 1, 1995 - September 30, 1996	\$ 29,403
	C. "Customized Telecommunication Access Patterns," July 10, 1995 - October 31, 1995	\$ 11,500
	D. "A Fault Tolerant Dynamic Routing System" May 26, 1996 - August 31, 1996	\$ 18,000
12.	Harris Corporation Principal Investigator	\$ 113,008
	A. "Database and Data Processing Research" August 1, 1996 - May 14, 1997	\$ 23,370
	B. "Information Systems Research" May 15, 1997 - June 30, 1997	\$ 20,730
	C. "Integration of Text with Databases" July 1, 1997 - June 30, 1998	\$ 68,908
13.	IIT Research Institute (subcontracts from US Government grants) Principal Investigator	\$ 322,698
	A. "EMPIRE: An Online Medical Library" US Army (subcontract) October 1, 1998 - March 29, 2000 (\$75,000 & \$116,699)	\$ 191,699
	B. "On the Design of an Alternative Medicine Information Retrieval System" National Institutes of Health - NCCAM (subcontract) October 1, 1998 - September 30, 1999 (\$40,000 & \$66,000)	\$ 106,000
	C. "Data Warehouse Scalability Study" January 1, 2000 - June 30, 2000	\$ 24,999
14.	"An Educational Metasearch Engine," Sun Microsystems, Inc. (Principal Investigator: O. Frieder, Co-Principal Investigator: D. Grossman) June 1, 2000 - May 31, 2001	\$ 39,400
15.	"User Interface Design for a Scalable Data Warehouse," Hitech Component Distributors (HiTechCafe.com) (Principal Investigator: O. Frieder, Co-Principal Investigator: D. Grossman) August 1, 2000 - July 31, 2001	\$ 94,000
16.	"Research Infrastructure for Distributed System Development" DARPA (Principal Investigator: X. Sun, Co-Principal Investigators: O. Frieder, P. Dickens, C. Hood, H. Zhang) January 1, 2001 - December 31, 2002	\$ 173,000

17. "Next Generation Search of the World Wide Web,"
Hitech Component Distributors (HiTechCafe.com)
(Principal Investigator: O. Frieder, Co-Principal Investigator: D. Grossman)
August 1, 2001 - July 31, 2003 \$ 600,000

18. "Acquisition of a Computing Cluster and Access Grid Node for Information Technology Research"
National Science Foundation
(Principal Investigator: X. Sun, Co-Principal Investigators: O. Frieder, P. Dickens, C. Hood, H. Zhang)
September 15, 2001 - August 31, 2003 \$ 175,333

19. "Textual-Geospatial Integration Services for NSDL"
National Science Foundation (sub-contract from UCSB – Terry Smith, Principal Investigator)
(Principal Investigator: O. Frieder, Co-Principal Investigator: D. Grossman)
October 1, 2001 - September 30, 2003 \$ 152,205

20. "University Research Outreach: Information Technology Tools"
In-Q-Tel
(Principal Investigator: D. Grossman, Co-Principal Investigator: O. Frieder)
February 7, 2002 – February 6, 2003 \$155,213

21. "Lockheed Martin Subcontract RRMCS0753 - JAILYARD Program"
Lockheed Martin
(Principal Investigator: D. Grossman, Co-Principal Investigator: O. Frieder)
October 3, 2002 – October 1, 2004 \$263,642

22. "Arabic Stemmer License Agreement"
Blue Shoe Technologies
(Principal Investigator: O. Frieder, Co-Principal Investigator: D. Grossman)
June 1, 2003 – September 30, 2004 \$64,000

23. "Extending CS Undergraduate Curriculum to Include Data Mining and Information Retrieval"
National Science Foundation
(Principal Investigator: Ophir Frieder, Co-Principal Investigators: N. Goharian, D. Grossman, N. Raju)
September 1, 2001 - July 31, 2005 \$ 339,500

24. "Collaborative Project: Completing a Center of Excellence in Information Assurance at IIT"
National Science Foundation
(Principal Investigator: D. Grossman, Co-Principal Investigator: O. Frieder)
August 1, 2003 - July 31, 2005 \$ 144,000

25. "Research Support for Doctoral Students"
America Online
(Principal Investigator: O. Frieder, Co-Principal Investigator: D. Grossman)
September 1, 2003 – August 31, 2006 \$192,000

26. "CRCD/EI: An Undergraduate CS Specialization in Knowledge Management Systems"
National Science Foundation
(Principal Investigator: S. Argamon, Co-PI: O. Frieder, N. Goharian, D. Grossman, N. Raju)
October 1, 2004 – September 30, 2007 \$281,999

27.	BitSystems, Inc. (subcontracts from US Government grants) (Principal Investigator: O. Frieder, Co-Principal Investigator: D. Grossman)	\$ 995,000
	<ul style="list-style-type: none"> • “A Scalable Search Engine” August 1, 2000 - July 31, 2001 \$ 30,000 • “Using a Relational DBMS to Implement an XML Query Language” January 1, 2001 - September 30, 2001 \$ 60,000 • “Using a Relational DBMS to Implement an XML Query Language: Phase II” July 1, 2001 - September 30, 2001 \$ 60,000 • “Using a Relational DBMS to Implement an XML Query Language: Phase III” October 1, 2001 – September 30, 2002 \$ 120,000 • “Using a Relational DBMS to Implement an XML Query Language: Phase IV” October 1, 2002 – September 30, 2003 \$ 120,000 • “Using a Relational DBMS to Implement an XML Query Language: Phase V” October 1, 2003 – September 30, 2004 \$ 120,000 • “Using a Relational DBMS to Implement an XML Query Language: Phase VI” October 1, 2004 – July 31, 2009 \$ 485,000 	
28.	“Search Scalability Evaluation” Northrop-Grumman – subcontract from the “Survivor Program” (Principal Investigator: D. Grossman, Co-Principal Investigator: O. Frieder) September 24, 2004 – September 30, 2005	\$120,000
29.	“Complex Document Information Processing” ARDA (Principal Investigator: O. Frieder, Co-Principal Investigators: G. Agam, S. Argamon, and D. Grossman) March 12, 2005 – September 30, 2007	\$ 1,295,000
30.	“Knowledge Dissemination and Discovery (“KDD”) Challenge Problem Evaluation” IBM (Principal Investigator: S. Argamon, Co-Principal Investigators: O. Frieder and D. Grossman) July 1, 2005 – September 30, 2005	\$ 61,575
31.	“KDD Intranet Mediation” National Science Foundation – Supplement (Principal Investigator: O. Frieder, Co-Principal Investigators: G. Agam, S. Argamon, and D. Grossman) August 1, 2006 – July 31, 2007	\$ 175,000
32.	“Information Retrieval on a Parallel Database Machine” Netezza Corporation – Equipment Grant (Principal Investigator: O. Frieder, Co-Principal Investigator: D. Grossman) October 1, 2007 – September 30, 2008	\$ 291,400
33.	“On the Scalability of Search Systems” Advanced Systems Engineering Corporation (Principal Investigator: O. Frieder, Co-Principal Investigator: D. Grossman) February 1, 2008 – February 28, 2009	\$ 300,000
34.	“Acquisition of a Computing Cluster and Storage for Information Technology Research” National Science Foundation (Principal Investigator: X. Sun, Co-Principal Investigators: O. Frieder, C. Hood, Z. Lan, and H. Zhang) May 1, 2008 - April 30, 2011	\$ 331,003

35. "Improving Forensic Triage with Rapid Text Document Similarity Matching" \$ 367,081
 Naval Postgraduate School
 (Principal Investigator: C. Shields, Co-Principal Investigators: O. Frieder, M. Maloof, and M. Sherr)
 October 2010 – October 2011 (NSSC NPS N00244-11-1-0008) \$ 175,361
 August 2011 – July 2012 (N00104-11-M-Q978) \$ 191,720
36. "Scalable Robust Metaphor Identification" \$ 81,376
 IARPA – sub contract from IIT (years 1 & 2)
 Georgetown University Principal Investigator
 April 1, 2012 – January 31, 2014
37. "II-NEW: Infrastructure for Change: From a Teaching Department to National Prominence," \$ 460,000
 National Science Foundation
 (Principal Investigator: O. Frieder, Co-Principal Investigators: N. Goharian, M. Maloof, M. Sherr, C. Shields)
 July 1, 2012 – June 30, 2014.
38. "NeTS: Small: Collaborative Research: Maximizing Network Capacity in Multihop Wireless \$ 160,000
 MIMO Networks,"
 National Science Foundation
 (Linked NSF Proposal; Project PI: P.-J. Wan; Georgetown University Principal Investigator: O. Frieder)
 September 1, 2012 – August 31, 2015.
39. "Improving Partial Text Matching with Space-efficient Probabilistic Token Storage" \$ 331,985
 Naval Postgraduate School
 (Principal Investigator: C. Shields, Co-Principal Investigators: O. Frieder, M. Maloof, and M. Sherr)
 September 2013 – July 2015
40. "I/UCRC: S2ERC at Georgetown University" \$ 1,023,810
 National Science Foundation
 (Principal Investigator: O. Frieder, Co-Principal Investigator: E. Burger)
 April 1, 2014 – March 31, 2019.
41. "Strategic Planning Tools for Staging Malaria Elimination" \$ 125,000
 Bill and Melinda Gates Foundation (subcontract from Oxford University)
 (Principal Investigator: O. Frieder)
 September 1, 2014 – August 31, 2019
42. "Information Fusion and Inference Tools in Medical Application \$ 420,000
 Applying State of Being to Healthcare"
 DARPA
 (Principal Investigator: O. Frieder)
 August 1, 2015 – January 31, 2017
43. "EAGER: Guaranteed-Secure and Searchable Genomic Data Repositories" \$ 99,999
 National Science Foundation
 (Principal Investigator: A. O'Neill, Co-Principal Investigator: O. Frieder)
 September 1, 2016 – February 28, 2019
44. "Brain Science Research – Improving Tomorrow's Healthcare" \$1,179,090
 The Brain Sciences Foundation
 (Principal Investigator: O. Frieder)
 April 1, 2017 – March 31, 2020

45. “SPX: Automatically Parallelizing Approximate Data Analysis with Mergeable Summaries”
National Sciences Foundation
(Principal Investigator: J. Thaler, Co-Principal Investigators: J. Fineman and O. Frieder)
October 1, 2019 – September 30, 2022 \$ 614,203