

CURRICULUM VITAE

(Revised September 12, 2009)

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ACADEMIC TRAINING

Haverford College, B.S. (Chemistry), 1981
Columbia University, M.D., 1985
Columbia University, M.S. (Biostatistics, Mailman School of Public Health), 2000
NYS Medical License 167216

TRAINEESHIP AND BOARD CERTIFICATION

Internship: Internal Medicine, Presbyterian Hospital in the City of New York, 1985–1986
Residency: Internal Medicine, Presbyterian Hospital in the City of New York, 1986–1988
Certification: Internal Medicine Boards, 1988
Certification: Good Clinical Practices, Columbia University & New York-Presbyterian, 2000
Certification: HIPAA Training Course, Columbia University, 2003

APPOINTMENTS

Post-Doctoral Research Scientist, Center for Medical Informatics, Columbia University, 7/1/88–3/31/89
Associate Research Scientist, Center for Medical Informatics, Columbia University, 4/1/89–6/30/91
Assistant Professor of Medical Informatics (in Medicine), Columbia University, 7/1/91–6/30/98
Associate Professor of Medical Informatics (with tenure), Columbia University, 7/1/98–6/30/03
Acting Chair, Department of Medical Informatics, Columbia University, 9/8/98–12/31/99
Director of Clinical Information Services, New York-Presbyterian, 9/8/98–12/31/99
Vice Chair, Department of Biomedical Informatics, Columbia University, 1/1/00–3/11/07
(the department changed its name from Medical Informatics on 6/7/03)
Associate Director, Medical Informatics Services, New York-Presbyterian, 1/1/00–6/30/2007
Professor of Biomedical Informatics, Columbia University, 7/1/2003–present
Senior Informatics Advisor, New York City Department of Health and Mental Hygiene, 4/24/2006–present
Director, Center for Advanced Information Management, Columbia University, 3/1/2007–present
Chair, Department of Biomedical Informatics, Columbia University, 7/1/2007–present
Director, Medical Informatics Services, New York-Presbyterian Hospital/Columbia, 7/1/2007–present

Vivian Beaumont Allen Professor of Biomedical Informatics, Columbia University, 10/31/2008–present

PROFESSIONAL ORGANIZATIONS AND SOCIETIES

American College of Medical Informatics

Awards Committee, 2001–2007

Nominations Committee, 2002–2007

American Medical Informatics Association

Board of Directors, 1998–2000

Executive Committee of the Board (as Board Member at Large), 2000

Chair—AMIA Standards Committee, 1997–1998

AMIA Meetings Committee, 1994–1997

AMIA Nominations Committee, 1995–1996, 2008–2009

American National Standards Institute

AMIA representative—Healthcare Informatics Standards Board, 1996–1998

Association of American Medical Colleges

Voting member—Professional Development Group on Information Resources (GIR), 1998–2001

IAIMS: The Next Generation Review Panel, 1999–2001

ASTM International Standards Organization

Secretary—Subcommittee E31.15 Health Knowledge Representation, 1991–1998

Chair—Task Group E31.15.02 Arden Syntax, 1991–1998

National Library of Medicine

Biomedical Library and Informatics Review Committee, 2001–2005 (Chair 2004–2005)

New York Academy of Medicine, 2000–present

Library Committee, 2002–present

Institute of Medicine

Committee on the Assessment of the U.S. Drug Safety System, 2005–2006

HONORS

Desmond Costello Scholarship, 1977–1981

Phi Beta Kappa, Haverford College, 1980

Summa Cum Laude, Haverford College, 1981

Honors in Chemistry, Haverford College, 1981

Alpha Omega Alpha, Columbia University, 1984

Fellow of the American College of Medical Informatics, 1995

National Information Infrastructure Award in Health, 1996

Fellow of the New York Academy of Medicine, 2000

AMIA Fall Symposium Best Paper on an Application, 1996

Jain NL, Knirsch C, Friedman C, Hripcsak G. Identification of suspected tuberculosis patients based on natural language processing of chest radiograph reports. Proc AMIA Annu Fall Symp 1996:542–6.

AMIA Symposium Best Theoretical Paper, 1998

Friedman C, Hripcsak G, Shablinsky I. An evaluation of natural language processing methodologies. Proc Amia Symp 1998:855–9.

AMIA Symposium Best Paper on an Application, 2002

Stetson PD, Johnson SB, Scotch M, Hripcsak G. The sublanguage of cross-coverage. Proc AMIA Symp 2002: 742–6.

AMIA Symposium Distinguished Paper Award, 2008

Gold S, Elhadad N, Zhu X, Cimino JJ, Hripcsak G. Extracting structured medication event information from narrative clinical notes. Proc AMIA Symp 2008:237-41.

eTELEMED Best Paper, 2009

Zhu X, Gold S, Lai A, Hripcsak G, Cimino JJ. Using Timeline Displays to Improve Medication Reconciliation. International Conference on eHealth, Telemedicine, and Social Medicine (eTELEMED 2009), 2009 February 1-7; Cancun, Mexico, 2009.

Papers selected for Annual IMIA Yearbook of Medical Informatics: 1994, 1996, 1999, 2007, 2008

FELLOWSHIP AND GRANT SUPPORT (LEADERSHIP ROLES)

Principal Investigator of R01 and co-PI of center (Farzad Mostashari center PI)—Centers for Disease Control and Prevention P01HK000029-020003 “Public Health Reporting” in NYC Center of Excellence in Public Health Informatics, August 2006 to July 2009 (\$831,000 subcontract award, \$3,000,000 total center award)

Principal Investigator—Microsoft Research “Phenotypic pipeline for genome-wide association studies,” April 2008 to April 2009 (\$151,100 award)

Principal Investigator—The Smart Family Foundation Inc. grant, “Biomedical informatics research,” December 2008 to November 2009 (\$25,000 award)

Principal Investigator—National Library of Medicine T15 LM007079-14 “Training in Biomedical Informatics at Columbia University,” July 2007 to June 2012 (\$6,867,899 award)

Principal Investigator—National Library of Medicine R01 LM06910-07 “Discovering and applying knowledge in clinical databases,” September 2006 to September 2009 (\$1,083,735 award)

Co-Principal Investigator (Carol Friedman PI)—National Library of Medicine R01 LM08635 “A biomedical natural language processing resource,” July 2005 to June 2009

Principal Investigator—National Library of Medicine R01 LM06910-04 “Discovering and applying knowledge in clinical databases,” June 2003 to May 2006 (\$1,143,134 award)

Principal Investigator—National Library of Medicine R01 LM06910-01 “Discovering and applying knowledge in clinical databases,” April 2000 to March 2003 (\$1,216,034 award)

Principal Investigator—Agency for Healthcare Research and Quality R18 HS11806 “Mining complex clinical data for patient safety research,” September 2001 to August 2004 (\$1,085,608 award)

Principal Investigator—Pfizer Inc. NY01-002153889 “Using information systems to advance clinical research and clinical care,” January 2001 to December 2001 (\$100,000 award)

Principal Investigator—New York State Science and Technology Foundation “Wearable computers,” April 2001 to June 2001 (\$10,000 award)

Principal Investigator—National Library of Medicine R29 LM05627 “Linking knowledge-based systems to clinical databases” (First Award), June 1994 to May 1999 (\$564,000 award)

Principal Investigator—Pfizer Inc. “Community acquired pneumonia management,” January 1998 to December 1998 (\$56,000 award)

Principal Investigator—New York State Science and Technology Foundation “Wireless access to clinical information and physician-driven reminders,” July 1996 to June 1997 (\$70,000 award)

Principal Investigator—US Department of Commerce TIIAP 36-40-94065 “Applied Informatics,” October 1994 to April 1996 (\$2,600,000 total project cost: \$733,000 from US Dept. of Commerce; \$80,000 from CTIA Foundation for Wireless Telecommunications and NYNEX Mobile Communications; \$1,000,000 from IBM; balance from Visiting Nurse Service of New York, New York City Dept. of Health, and Trustees of Columbia University)

Principal Investigator—Agency for Health Care Policy and Research R13 HS08761 “Capturing the Clinical Encounter” (Conference Grant), June 1995 to May 1996 (\$23,000 award)

Principal Investigator—The Smart Family Foundation Inc. grant, “Computer Technology to Improve Health Care,” November 1995 to October 1996 (\$10,000 award)

Principal Investigator for Columbia University subcontract (Carol Friedman overall PI)—National Library of Medicine R01 LM06274 (continuation) “Unlocking data from medical records with text processing,” January 2001 to December 2003 (\$432,581 subcontract award, \$878,193 total award)

Principal Investigator for Columbia University subcontract (Carol Friedman overall PI)—National Library of Medicine R01 LM06274 “Unlocking data from medical records with text processing,” July 1997 to June 2000 (\$315,000 subcontract award, \$632,000 total award)

Faculty Sponsor (for PI Joseph Finkelstein)—New York State Science and Technology Foundation “Computerized pulmonary monitoring center,” July 1997 to June 1998 (\$100,000 award)

DEPARTMENTAL AND UNIVERSITY COMMITTEES

Chair—Research Committee, Department of Medical Informatics, Columbia University, 1992–1998

Chair—Departmental Committee on Human Investigation, Department of Medical Informatics, Columbia University, 1995–1998

Research Advisory Committee, College of Physicians and Surgeons, Columbia University, 1994–1999

Faculty Council of the Faculty of Medicine, Columbia University, 1997–present
Executive Committee of the Faculty Council (elected), 2004–2007

Health Sciences Task Force on New Media, Columbia University, 1999–2001

Ad Hoc Committee on Research in Error Reduction, Columbia University, Cornell University, and New York Presbyterian Healthcare, 2000–2002

Information Technology Committee of the Board of Trustees of New York-Presbyterian Hospital, 2000–present

Health Sciences Conflict of Interest Committee, Columbia University, 2000–2007

P & S Club Faculty Advisory Board, College of Physicians and Surgeons, Columbia University, 2001–2005

Executive Subcommittee of the Strategic Planning Committee for Patient Care, Columbia University, 2001–2002

University Senate Committee on Online Learning and Digital Media Initiatives, Columbia University, 2002–present (as non-senator committee member until 2006)

University Senate, Columbia University, 2006–present

Clinical Trials Advisory Committee, Columbia University, 2000–2005

Clinical Trials Office Strategic Advisory Committee, Columbia University, 2005–present
Columbia Faculty Practice Organization Information Technology Committee, 2006–present
CUMC Space Advisory Committee, Columbia University, 2007–present
Doctoral Program Subcommittee on Biostatistics, Columbia University, 2008–present
New York Presbyterian Hospital Medical Board, 2007–2011
Columbia Faculty Practice Organization Physician Champion Committee, 2007–present
New York Presbyterian Hospital Trustee Committee on External Relations, 2008–present
Task Force on E-Science, Columbia University, 2008–2009

TEACHING EXPERIENCE AND RESPONSIBILITIES

Training director—Graduate programs in biomedical informatics, including masters, PhD, and post-doctoral students, 2007–present
Course director—MINF G4060 Evaluation Methods in Medical Informatics; 7 students per year, 1997–2004
Course director—Research Elective in Medical Informatics; 26 students total, 1995–1998
Course director—MINF G4001 Introduction to Medical Informatics; 25 students per year, 1993–1995
Course director—Arden Syntax Tutorial, Symposium on Computer Applications in Medical Care; 50 students per year, 1993–1995
Director—Center for Medical Informatics Seminar Series, 1991–1992
Instructor—W4995 Topics in Medical Informatics; 4 students, 1994
Instructor—MINF G4003 Methods in Biomedical Informatics; 30 students, 2005–present
Instructor—MINF G4001 Introduction to Medical Informatics, 2001–present
Instructor—Medical Informatics course, held at Woods Hole, MA, sponsored by the National Library of Medicine; 30 students per year, 1996–1999, 2003–2006
Guest Lecturer—NIH Clinical Elective in Medical Informatics for medical students, 1998–2002
Doctoral research advisees
Adam Wilcox, Ph.D.—“Automated classification of medical text reports,” 1995–2000
now Assistant Professor of Biomedical Informatics, Columbia University
(First Place Student Paper Award, AMIA 2000 Symposium)
(HIMSS scholarship, 2000)
(Student Paper Finalist, AMIA 1999 Symposium)
Jen-Hsiang Chuang, M.D., Ph.D.—“Automated abstraction of medical records for patient outcomes,”
2000–2002
now Assistant Professor of Medical Informatics, National Yang-Ming University, Taiwan
(Student Paper Finalist, AMIA 2000 Symposium)
(Student Paper Finalist and Homer Warner Award nominee, AMIA 2002 Symposium)
Michael Krauthammer, M.D., Ph.D.—“Natural language processing for the extraction of molecular pathways
from journal articles,” 2001–2004
now Assistant Professor of pathology and bioinformatics, Department of Pathology, Yale University
(Third Place Student Paper Award, AMIA 2001 Symposium)
Hui Cao, M.S.—“Abstracting patient features from narrative medical records using a semantic, knowledge-based
approach,” 2001–2006

now Senior Consultant at Deloitte Consulting
(Student Paper Finalist, AMIA 2005 Symposium)
(Passed thesis defense with distinction)

Li Zhou, B.Med., M.S.—“Extracting, representing and reasoning with temporal information in clinical narrative reports,” 2002–2007

now Informatician at Partners Healthcare
(Student Paper Finalist, AMIA 2005 Symposium)

Other graduate research advisees (masters, fellowship)

Nilesh Jain, D.Sc.—health information networks, 1995–1996
(Best Paper on an Application, AMIA 1996 Fall Symposium)

Joseph Finkelstein, M.D., Ph.D.—telemedicine, 1996–1999

now Assistant Professor, Department of Epidemiology and Preventive Medicine, University of Maryland
(New York State Science and Technology Foundation grant)
(Travel award, MEDINFO '98)

Min Wu—Statistical approaches to security auditing, 1996–1997

Jinsong Cai, Ph.D., M.A.—Telemedicine and data mining, 1998–2000
(Student Paper Finalist, AMIA 2000 Symposium)

Jacob Elkins, M.D.—Applying natural language processing to neuroradiology research, 1998–1999

David Baorto, M.D., Ph.D.—Data warehousing, 1999–2000

now Knowledge Engineer, NYP Clinical Info & Ops Supp

Hong Yu, Ph.D.—Genomic data mining in clinical databases, 1999–2000

now Associate Research Scientist in Biomedical Informatics, Columbia University

Mona Chang—Automatically predicting patient classification using machine learning and knowledge-based imputations of risk factors, 2001

Matthew Scotch—Wireless wearable computing, 2001–2002

Paola Karina Tulipano—Automated detection of NYPORTS events, 2001–2003

Alexander Yu—Calibrating adverse event detection to the literature, 2001–2003

Davis Bu, M.D., M.A.—Uncovering adverse events via conflicts in the medical record, 2001–2004

now Informatician, Partners Healthcare, Boston

Peter Stetson, M.D., M.A.—Data mining for patient safety research, 2001–2003

now Assistant Professor of Clinical Medicine and Clinical Medical Informatics, Columbia University
(Best Paper on an Application, AMIA 2002 Symposium)

Shameek Biswas—Variance estimation in machine learning, 2003–2004

Genevieve Melton-Meaux, M.D., M.A.—Adverse event detection using narrative data, 2003–2005

now Surgery Administrative Chief Resident, The Johns Hopkins University

Tara Borlowsky, M.A.—Pressure ulcer risk assessment model, 2004

Adam Rothschild, M.D., M.A.—Problem-driven computerized physician order entry, 2004–2005

Gerald Cohen, M.D.—Implementing preventive care guidelines in ambulatory practice, 2005–2006

Anshu Sinha, M.Eng.—Implementing regional clinical data exchange, 2006

Jason Shapiro, M.D.—Evaluating regional clinical data exchange, 2006–present

Lily Li—Syndromic surveillance via natural language processing, 2007–2008

Sigfried Gold—Deriving medication lists from electronic medical records, 2007–2008

Doctoral thesis committee member

Jou-Wei Lin, M.D., Ph.D.—“Improving image-based quantification of physiological functions through noise reduction: the use of wavelet methods on dynamic cardiac PET studies,” 1996–1999
(now Assistant Professor of Medical Informatics, Taipei, Taiwan)

Qing Zeng, Ph.D.—“Concept-oriented views of electronic medical records,” 1996–1999
(now Research Associate, Decision Systems Group, Harvard University)

Eneida A. Mendonça, M.D., Ph.D.—“Improving access to medical knowledge using automated extraction from the medical record,” 1999–2002

David Campbell, Ph.D.—“Natural language processing and lexicon design,” 2000–2004
 (Second Place Student Paper Award, AMIA 2001 Symposium)

Dongwen Wang, Ph.D.—“Clinical guideline development and maintenance,” 2000–2003

Guoguang (Julie) MA, Ph.D.—“Extensions of the index of sensitivity to nonignorability (ISNI),” 2001

Hong Yu, Ph.D.—“Synonyms/homonym resolutions of gene and protein symbols and names,” 2001–2003

Indra Neil Sarkar, Ph.D.—“Characteristic attribute organization system (CAOS),” 2001–2004

Elizabeth Chen, Ph.D.—“Knowledge discovery in clinical information system log files and the implications for wireless handheld clinical applications,” 2002–2004

Hui Xie, Ph.D.—“An index of sensitivity to nonignorability: extensions and applications,” 2003

Hong Tian, Ph.D.—“Cross-validation estimates of performance of learning algorithms: issues in variance estimation,” 2003–2005

Paola Karina Tulipano—Classification of images incorporating clinical information, 2006–2007

Katie Zhu—Medication reconciliation and temporal visualization, 2006–2009

Xin Liu—Image processing using bilateral asymmetry, 2007–2008

Hua Xu—Using automated methods to handle biomedical abbreviations, 2007–2008

Anshu Sinha—Analyzing large biomedical data sets, 2007–present

Kai Wang—A systems biology approach for dissecting mammalian cellular networks, 2007–2008

Adam Margolin—Computational inference of genetic regulatory networks in human cancer cells, 2007–2008

Kartik Mani—A systems biology approach to deciphering oncogenic mechanisms and drug activity in cancer cells, 2007–2008

Xiaoyan Wang—2008–present

Wei Keat Lim—Master regulators analysis of malignant transformations using molecular interaction networks, 2008–2009

Daniel Stein—Physician cooperative task management across patient handoffs, 2008–present

Karthik Natarajan—2009–present

Jesse Wrenn—2009–present

Tzu-Lin Hsiao—Global reconstruction of metabolic networks, 2009–present

Developed the “Online Lecture Notes in Medical Informatics” while teaching MINF G4001 (1993–1995); the notes, which comprised 200 pages of outlined material, was downloaded by over 1000 persons interested in medical informatics and was used in over 90 courses and curricula around the world

OTHER PROFESSIONAL ACTIVITIES

Co-chair—Meaningful Use Workgroup of the HIT Policy Committee of the Office of the National Coordinator of Health Informatics Technology, 2009–present

WebCIS—Responsible for the design, development, and management of WebCIS, the Web-based clinical information system of Columbia University Medical Center and New York-Presbyterian Hospital’s Columbia Campus (7000 users), 1997–present

Associate editor—Journal of the American Medical Informatics Association, 2003–2007

Associate editor—Computers in Biology and Medicine, 1994–2007

Editorial board member

Journal of the American Medical Informatics Association, 2001–2002, 2007–present

Journal of Biomedical Informatics, 2001–2007

Committee member—Institute of Medicine’s Committee on the Assessment of the U.S. Drug Safety System, 2005–2006

Guest editor—Special issue on the Arden Syntax, Computers in Biology and Medicine 1994;24(5)

Guest editor—Annual IMIA Yearbook of Medical Informatics, 1994 and 1995 (Jan H. van Bommel and Alexa T. McCray, editors. Stuttgart: Schattauer)

Program vice chair—American Medical Informatics Association Annual Symposium, November 10–14, 2007, Chicago

Program chair—American Medical Informatics Association Spring Congress, June 24–28, 1995; Boston

Scientific program or steering committee

American Medical Informatics Association Symposium (formerly SCAMC), 1991, 1996, 1999, 2003

Health Information Systems Technology Forum of the New York Academy of Medicine, 1997

Intelligent Data Analysis in Medicine and Pharmacology, 2004

National Health Information Infrastructure Conference topic expert in Measuring Progress, 2004

BioNLP ACL Workshop on NLP for Biology, Bench-to-Bedside, and Clinical Care, 2007

Grant reviewer

National Library of Medicine

Agency for Health Care Policy and Research

National Cancer Institute

John A. Hartford Foundation of New York

The Robert Wood Johnson Foundation

Indiana 21st Century Research and Technology Fund

Canada Foundation for Innovation's Research Hospital Fund (reviewed a \$250,000,000 project)

Manuscript reviewer

Annals of Internal Medicine (acknowledged as one of the highest quality reviews 1997, 1999, 2000, 2001, 2002, 2003)

Journal of the American Medical Informatics Association

Journal of Biomedical Informatics

Computers and Biomedical Research

Computers in Biology and Medicine

International Journal of Medical Informatics

Gastrointestinal Endoscopy

American Medical Informatics Association Symposium (formerly SCAMC) and AMIA Spring Congress

MEDINFO

Artificial Intelligence in Medicine

External academic department reviews

Department of Biomedical Informatics, University of Utah, 2006

Department of Medical Education and Biomedical Informatics, University of Washington, 2009

Search committees

CIO for National Institutes of Health Clinical Center, 1998

Judge

Student Paper Competition, American Medical Informatics Association Symposium, 1998

National Information Infrastructure Awards, 1998

Technical Advisory Panel

Commissioned by Governor Phil Bredesen of Tennessee to oversee the AHRQ Volunteer eHealth Initiative of the Vanderbilt Center for Better Health, 2004–present (Chair, 2006–present)

Presentation to Tommy G. Thompson, Secretary of Health and Human Services, on health information infrastructure and patient safety, March 14, 2003.

Presentation to Leonel Fernandez, President of the Dominican Republic, on success factors for deploying information systems in health care, February 12, 2004

Presentation at Princeton University on mining a clinical data repository for clinical research and patient safety, March 23, 2004

Presentation at the Fox Chase Cancer Center on “Clinical Data Warehousing,” July 28, 2004

Presentation on “Mining a clinical data repository for clinical research and patient safety,” Distinguished Lecture Series, University of South Alabama, October 15, 2004

Presentation to the National Library of Medicine Board of Regents on “Discovering and applying knowledge in clinical databases,” February 15, 2005

Review panel member for the M. D. Anderson Cancer Center Electronic Medical Record Project, June 27, 2005

American Health Information Community Biosurveillance Data Elements Ad Hoc Group, 2006

Presentation at the Scottsdale Institute Fall 2006 Conference on “The IT-Quality Link,” September 29, 2006

Presentation on “Biomedical Research and Electronic Health Record” at the Personal Electronic Health Records Conference, National Library of Medicine, May 20, 2009

Patent No. 5,555,191 “Automated Statistical Tracker,” issued September 10, 1996

Patent No. 6,241,685 “Asthma monitoring technology,” issued June 5, 2001

PUBLICATIONS—PEER-REVIEWED JOURNALS (EXCLUDING PROCEEDINGS AND SUPPLEMENTS)

Sinha A, Hripcsak G, Markatou M. Large data sets in biomedicine: analytical issues. *J Am Med Inform Assoc*, accepted for publication contingent on revision.

Wang X, Hripcsak G, Friedman C. Characterizing environmental and phenotypic associations using information theory and electronic health records. *BMC Bioinformatics*, accepted for publication.

Mostashari F, Shapiro JS, Hripcsak G, Soulakis N, Kuperman G. Using regional health information exchanges to improve public health. *Am J Public Health*, accepted for publication.

Hripcsak G, Soulakis ND, Li L, Morrison FP, Lai AM, Friedman C, Calman NS, Mostashari F. Syndromic surveillance using ambulatory electronic health records. *J Am Med Inform Assoc* 2009;16:354-61.

Wang X, Hripcsak G, Markatou M, Friedman C. Active computerized pharmacovigilance using natural language processing, statistics, and electronic health records: a feasibility study. *J Am Med Inform Assoc* 2009;16:328-37.

Hripcsak G, Elhadad N, Chen C, Zhou L, Morrison FP. Using empirical semantic correlation to interpret temporal assertions in clinical texts. *J Am Med Inform Assoc* 2009;16:220-7.

Morrison FP, Li L, Lai A, Hripcsak G. Repurposing the clinical record: can an existing natural language processing system de-identify clinical notes? *J Am Med Inform Assoc* 2008;16:37-9.

Merrill J, Hripcsak G. Using social network analysis within a department of Biomedical Informatics to induce a discussion of academic communities of practice. *J Am Med Inform Assoc* 2008;15:780-2.

Cao H, Melton GB, Markatou M, Hripcsak G. Use of abstracted patient-specific features to assist an information-theoretic measurement to assess similarity between medical cases. *J Biomed Inform* 2008;41:882-8. PMC2584163

Sengupta S, Calman NS, Hripcsak G. A model for expanded public health reporting in the context of HIPAA. *J Am Med Inform Assoc* 2008;15:569-74.

Zhou L, Parsons S, Hripcsak G. The evaluation of a temporal reasoning system in processing clinical discharge summaries. *J Am Med Inform Assoc* 2008;15:99-106. PMC2274869

Chen Y, Perl Y, Geller J, Hripcsak G, Zhang L. Comparing and consolidating two heuristic metaschemas. *J Biomed Inform*, 2008;41:293-317.

- Chen ES, Hripcsak G, Xu H, Markatou M, Friedman C. Automated acquisition of disease-drug knowledge from biomedical and clinical documents: an initial study. *J Am Med Inform Assoc* 2008;15:87-98. PMC2274872
- Chapman WW, Dowling JN, Hripcsak G. Evaluation of training with an annotation schema for manual annotation of clinical conditions from emergency department reports. *Int J Med Inform* 2008;77:107-13.
- Xu H, Fan JW, Hripcsak G, Mendonca EA, Markatou M, Friedman C. Gene symbol disambiguation using knowledge-based profiles. *Bioinformatics* 2007;23:1015-22.
- Yu H, Lee M, Kaufman D, Ely J, Osheroff JA, Hripcsak G, Cimino J. Development, implementation, and a cognitive evaluation of a definitional question answering system for physicians. *J Biomed Inform* 2007;40:236-51.
- Zhou L, Hripcsak G. Temporal reasoning with medical data - A review with emphasis on medical natural language processing. *J Biomed Inform* 2007;40: 183-202.
(Republished in 2008 IMIA Yearbook of Medical Informatics.)
- Hripcsak G, Sengupta S, Wilcox A, Green RA. Emergency department access to a longitudinal medical record. *J Am Med Inform Assoc* 2007;14:235-8. PMC2213459
- Cao H, Hripcsak G, Markatou M. A statistical methodology for analyzing cooccurrence data from a large sample. *J Biomed Inform* 2007;40:343-52. PMC2041889
- Hripcsak G, Knirsch C, Zhou L, Wilcox A, Melton GB. Using discordance to improve classification in narrative clinical databases: an application to community-acquired pneumonia. *Comput Biol Med* 2007;37:296-304.
- Borlawsky T, Hripcsak G. Evaluation of an automated pressure ulcer risk assessment model. *Home Health Care Management Practice* 2007;19:272-84.
- Melton GB, Parsons S, Morrison FP, Rothschild AS, Markatou M, Hripcsak G. Inter-patient distance metrics using SNOMED CT defining relationships. *J Biomed Inform* 2006;39:697-705.
- Zhou L, Tao Y, Cimino JJ, Chen ES, Liu H, Lussier YA, Hripcsak G, Friedman C. Terminology model discovery using natural language processing and visualization techniques corresponding. *J Biomed Inform* 2006;39:626-36.
- Zhou L, Melton GB, Parsons S, Hripcsak G. A temporal constraint structure for extracting temporal information from clinical narrative. *J Biomed Inform* 2006;39:424-39.
- Markatou M, Tian H, Biswas S, Hripcsak G. Analysis of variance of cross-validation estimators of the generalization error. *Journal of Machine Learning Research* 2005;6:1127-68.
- Miller RA, Gardner RM, Johnson KB, Hripcsak G. Clinical decision support and electronic prescribing systems: a time for responsible thought and action. *J Am Med Inform Assoc* 2005;12:403-9. PMC1174885
- Melton GB, Hripcsak G. Automated detection of adverse events using natural language processing in discharge summaries. *J Am Med Inform Assoc* 2005;12:448-57. PMC1174890
(Republished in 2007 IMIA Yearbook of Medical Informatics.)
- Zhang L, Hripcsak G, Perl Y, Halper M, Geller J. An expert study for evaluation of the lexical metaschema of the UMLS Semantic Network. *Artificial Intelligence in Medicine* 2005;34:219-33.
- Sittig DF, Shiffman RN, Leonard K, Friedman C, Rudolph B, Hripcsak G, Adams LL, Kleinman LC, Kaushal R. A draft framework for measuring progress towards the development of a national healthcare information infrastructure. *BMC Medical Informatics and Decision Making* 2005, 5:14. PMC1177954
- Hripcsak G, Rothschild AS. Agreement, the F-measure, and reliability in information retrieval. *J Am Med Inform Assoc* 2005;12:296-8. PMC1090460
- Hripcsak G, Zhou L, Parsons S, Das AK, Johnson SB. Modeling electronic discharge summaries as a simple temporal constraint satisfaction problem. *J Am Med Inform Assoc* 2005;12:55-63. PMC543827
- Zhang L, Perl Y, Halper M, Geller J, Hripcsak G. A lexical metaschema for the UMLS semantic network. *Artificial Intelligence in Medicine* 2005;33:41-59.
- Friedman C, Shagina L, Lussier Y, Hripcsak G. Automated encoding of clinical documents based on natural language processing. *J Am Med Inform Assoc* 2004;11:392-402. PMC516246
- Bakken S, Hripcsak G. An informatics infrastructure for patient safety and evidence-based practice in home healthcare. *Journal of Healthcare Quality* 2004;26:24-30.

- Hripcsak G, Stetson PD, Gordon P. Using the FCIM curricular guide and administrative codes to assess internal medicine resident breadth of experience. *Acad Med* 2004;79:557-63.
- Bakken S, Cimino JJ, Hripcsak G. Enabling patient safety and evidence-based practice through informatics. *Medical Care* 2004; 42:S49-56.
- Hripcsak G, Bakken S, Stetson PD, Patel VL. Mining complex clinical data for patient safety research: a framework for event discovery. *J Biomed Inform* 2003;36:120-30.
- Cao H, Stetson P, Hripcsak G. Assessing explicit error reporting in the narrative electronic medical record using keyword searching. *J Biomed Inform* 2003;36:99-105.
- Murff HJ, Patel VL, Hripcsak G, Bates DW. Detecting adverse events for patient safety research: a review of current methodologies. *J Biomed Inform* 2003;36:131-43.
- Wilcox AB, Hripcsak G. The role of domain knowledge in automating medical text report classification. *J Am Med Inform Assoc* 2003;10:330-8. PMC181983
- Bates DW, Evans RS, Murff H, Stetson PD, Pizziferri L, Hripcsak G. Detecting Adverse Events Using Information Technology. *J Am Med Inform Assoc* 2003;10:115-28. PMC150365
- Bates DW, Evans RS, Murff H, Stetson PD, Pizziferri L, Hripcsak G. Policy and the Future of Adverse Event Detection Using Information Technology. *J Am Med Inform Assoc* 2003;10:226-8. PMC150376
- Hripcsak G, Heitjan D. Measuring agreement in medical informatics reliability studies. *J Biomed Inform* 2002;35:99-110.
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