

Douglas A. Talbert

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Research Interests:

Machine learning, data mining, regional health informatics, clinical decision support

Teaching Interests:

Artificial intelligence, machine learning, software engineering, human-computer interaction

Education:

Ph.D. Computer Science Vanderbilt University, Nashville, TN
March 2001 Advisor: Dr. Douglas H. Fisher (Ph.D. Computer Science, Univ. of Cal. Irvine)
Thesis Title: *Analytic and Adaptive Techniques for Improving Nearest-Neighbor Search Performance in K-Dimensional Trees*

M.S. Computer Science Vanderbilt University, Nashville, TN
December 1993 Advisor: Dr. Douglas H. Fisher (Ph.D. Computer Science, Univ. of Cal. Irvine)
Paper Title: *Automating the Search for Multiple Data Models*

B.S. Mathematics Tennessee Technological University, Cookeville, TN
May 1991 (*Summa Cum Laude, In Cursu Honorum*)

Experience:

July 2007 – present Chairperson, Dept. of Computer Science,
Tennessee Technological University, Cookeville, TN

July 2007 – present Associate Professor, Dept. of Computer Science,
Tennessee Technological University, Cookeville, TN

July 2005 – June 2007 Interim Chairperson, Dept. of Computer Science,
Tennessee Technological University, Cookeville, TN

January 2005 – present Adjunct Assistant Professor, Dept of Biomedical Informatics,
Vanderbilt University, Nashville, TN

August 2002 – June 2006 Assistant Professor, Dept of Computer Science,
Tennessee Technological University, Cookeville, TN

July 2001 – May 2002 Assistant Professor, Dept of Biomedical Informatics,
Vanderbilt University Medical School, Nashville, TN

June 1997 – June 2001 Health Systems Software Engineer, Informatics Center,
Vanderbilt University Medical Center, Nashville, TN

August 1995 – May 1997 Research Assistant, Informatics Center,
Vanderbilt University Medical Center, Nashville, TN

May 1994 – July 1995 Research Assistant, Dept. of Computer Science,
Vanderbilt University, Nashville, TN

June 1991 – April 1994 Teaching Assistant, Dept. of Computer Science,
Vanderbilt University, Nashville, TN

Summers 1988 – 1990 Computer Programmer, National Energy Research Supercomputer Center
Lawrence Livermore National Laboratory, Livermore, CA

Honors/Awards:

2002	Co-recipient of an ASHP Best Practices Award in Health-System Pharmacy
August 1991 – May 1995	IBM Fellowship
1991 – 2004	Phi Kappa Phi
1991 – 92, 1993 – 94	Teaching Assistant Award for top teaching assistant in the Computer Science
1991	Finalist for Derryberry Award for outstanding graduate of Tennessee Tech University
1990	Tennessee Tech Mathematics Award
1990	Kappa Mu Epsilon, (Math Honors Society)
1989	R. H. Moorman Mathematics Award
1988	Alpha Lambda Delta (Freshman Honors Society)
1987	Tennessee representative to Dept. of Energy Computer Science High School Honors Program

Professional Organizations:

Association for Computing Machinery (ACM)
American Medical Informatics Association (AMIA): member of the Clinical Information Systems and Internet working groups and the Knowledge Discovery and Data Mining and Telehealth special interest groups
IEEE Computer Society

Service Positions:

2010 – 2011	Member, Engineering Dean's Search Committee
2009 – 2010	Chair, Academic Subcommittee of the ITC
2006 – 2007	Member, Computer Science Faculty Search Committee, Chair (2005-06)
2006	Eagle Scout Mentor
2005 – present	University Curriculum Committee
2005 – present	Information Technology Committee (ITC), Chair (2007-09)
2005 – 2007	Chair, Internet2 Subcommittee of the ITC
2005 – 2007	ADA Advisory Committee
2004 – present	Computer Science Programming Fundamentals Committee
2003 – present	Computer Science High School Liaison
2003 – present	Computer Science Equipment Committee
2003 – present	Chair, Computer Science ABET Accreditation Committee
2003 – present	Chair, CAT Scholarship Committee
2003 – 2004	Manufacturing Center Faculty Search Committee
2002 – 2008	Coordinator, Tennessee Tech's Software Automation and Intelligence Lab (SAIL)
2002 – 2005	Chair, Computer Science Library Committee
2003 – present	Coordinator, SURGE Program (integrated BS/MS degree program in Computer Science)
2002 – present	Computer Science Graduate School Committee
2002 – present	Computer Science Curriculum Committee
2002 – present	Faculty Sponsor, University Christian Student Center
2002 – 2010	Judge, ACM Programming Contest

Consulting:

- Mar 2010 – present Member, Technology Workgroup
Health Information Partnership for Tennessee (HIP TN)
Help develop technology-related policies and select products to support the interoperability of Health Information Exchanges across the state of Tennessee.
- Jun 2004 – Dec 2005 Project Consultant, Horizon Expert Orders
McKesson Inc., Nashville, TN
Helped with commercialization of Vanderbilt's CPOE system
- Aug 2003 – Jul 2004 Project Consultant, Automated Knowledge Discovery Systems
InRAD LLC, Oak Ridge, TN
Technical lead working on NIST/ATP grant to automatically identify, extract, and categorize information from free text Web-based repositories
- Jun 2002 – May 2003 Project Consultant, WizOrder
Vanderbilt University Medical Center, Nashville, TN
Helped train and support my replacement

Courses taught:

- CSC 1020: First-Year Connections – F09, F10
CSC 2001: Concepts in Computer Science – F04, S05, F06, S07
CSC 2030: Practical and Professional Issues in Computer Science – F02, S03, F03
CSC 2111: Data Structures and Algorithms Lab – S09, F09
CSC 2710: Foundations of Computer Science – F02
CSC 3030: Practical and Professional Issues in Computer Science – S09, S10
CSC 3700: Software Analysis and Design – S03, F03, S04, S06, F06 (RODP)
CSC 4240/5240: Artificial Intelligence – F02, F03
CSC 4550/5550: Advanced Systems Programming – M04
CSC 4700/5700: Software Engineering – S03, S04, S06
CSC 4900: Special Topics – S03 (Biomedical Informatics), F03 (Artificial Intelligence), F04 (Data Mining Visualization)
CSC 4903: Special Topics – S05 (Biomedical Informatics), F05 (High Performance Wide Area Networks), F07 (Knowledge-Based Systems), F10 (Programming and Interface Design for Multi-touch Displays)
CSC 4950: Capstone Project – M04
CSC 4990: Internship – F08, S09, F09, S10, F10, S11
CSC 5900: Special Topics – S03 (Machine Learning), M06 (Supervised Learning)
CSC 6230: Machine Learning – F08, S10, S11
CSC 6700: Advanced Software Engineering – F05
CSC 6710: Human/Computer Interaction and Interface Design – S04, S08
CSC 6800: Advanced Topics – F03 (Machine Learning), S04 (Machine Learning), S05 (Biomedical Informatics), M05 (Spatial Data Indexing), F05 (Probabilistic Record Matching), S06 (Approximate String Comparators), M06 (Machine Learning and Data Mining), F06 (Data Mining), S07 (Advanced Topics in Computer Science), S08 (Machine Learning), S11 (Compressed Sensing)
CSC 6910: Computer Science Seminar – F06
CSC 6980: The Graduate Program – S05, F05, S06, M06, F06, S07
CSC 6990: Research, Thesis – S03, F03, S04, F04, S05, M05, F05, S06, F06, S07, M08, M09, F10
HON 4013: Honors Colloquium: Artificial Intelligence – F04
HON 4021: Directed Studies (Artificial Intelligence) – S03

Graduate student advisees:Current students

Lily Li

Previous students

Aaron Smith (Thesis) The Effects of Parameter Tuning on Meta-Learning
Matt Honeycutt (Thesis) Knowledge Frontier Discovery

Jeremy Ey (Thesis) A Knowledge Discovery and Modeling Framework for Population-Sensitive Evaluation of Record Linkage Algorithms
 Fran Frank (Thesis) Intelligent Scheduling in the Service Sector Industry
 Sri Durga Varre (Project) Student Assessment Data Warehouse Pradeep Katta (Summer 06) Project: A Computational Geometry-Based Nearest-Neighbor Testbed Tool
 Deepthi Amudapuram (Summer 06) Project: A Web-Based Tool for Testing Approximate String Comparators
 Rajneesh Kumar (Spring 06) Thesis: Evaluating the Use of Cluster Distortion to Determine k in k-Means Clustering
 Sarada Chikkam (Fall 05) Project: The Use of Design Patterns in a Record Locator Service for a Regional Health Informatics Organization
 Ed Roush (Summer 05) Thesis: Document Quality Assessment for Automated internet Text Mining
 Marc Santoro (Summer 05) Thesis: Warping-based Feature Detection for Time Series
 Luis Velazco (Summer 05) Thesis: The Effect of SMOTE and Undersampling on Probability Estimates
 Anil Kallu (Spring 05) Project: A k-Nearest Neighbor Classification Testbed Tool
 Sarat Kesiraju (Spring 05) Thesis: An Empirical Estimation of the Generalizability of a Wavelet-based Approach to Clustering Time-Series Data

Reviewer for:

Pattern Recognition, INFORMS Journal on Computing, ACM Southeast, John Wiley & Sons, Inc., AMIA, FLAIRS

Conference and workshops attended:

May 2010	Florida Artificial Intelligence Research Society (FLAIRS) Daytona Beach, FL
November 2009	American Medical Informatics (AMIA) Fall Symposium San Francisco, CA
June 2009	American Society for Engineering Education Austin, TX
November 2008	American Medical Informatics (AMIA) Fall Symposium Washington, DC
November 2007	American Medical Informatics (AMIA) Fall Symposium Chicago, IL
November 2006	American Medical Informatics (AMIA) Fall Symposium Washington, DC
May 2006 – May 2007	Regents Academic Leadership Institute (RALI)
February 2006	ABET Best Assessment Processes VIII Symposium Terre Haute, IN
December 2005	Privacy and Confidentiality Workshop Vanderbilt Center for Better Health Nashville, TN
October 2005	AMIA Fall Symposium Washington, DC
July 2005	Connecting for Health, Technical Subcommittee Meeting Markle Foundation New York, NY
May 2005	Participant, SIP.edu Hand-On Workshop Arlington, VA
March 2005	Seminar by Edward Tufte on presenting data and information Nashville, TN
November 2004	MedInfo, International Medical Informatics Symposium San Francisco, CA

November 2003 AMIA Fall Symposium
Washington, DC

November 2002 AMIA Fall Symposium
San Antonio, TX

Referred Journal Articles:

1. Talbert SR, Talbert DA, Honeycutt MB, Smith A. "An Evaluation of Machine Learning Algorithms for Trauma Triage Decision Support." submitted to *The Journal of Trauma*.
2. Rosenbloom ST, Chiu KW, Byrne DW, **Talbert DA**, Neilson EG, Miller RA. "Interventions to regulate ordering of serum magnesium levels: an unintended consequence of decision support." *Journal of the American Medical Informatics Association*, 2005, **12**: 546-553.
3. Rosenbloom ST, Geissbühler AJ, Dupont WD, Giuse DA, **Talbert DA**, Tierney WM, Plummer WD, Stead WW, Miller RA. "Effect of CPOE user interface design on utilization of education decision support during patient care." *Journal of the American Medical Informatics Association*, 2005, **12**: 458-473.
4. Hulgán T, Rosenbloom ST, Hargrove F, **Talbert DA**, Arbogast PG, Bansal P, Miller RA, Kernodle DS. "Oral quinolone dosing in hospitalized patients: an evaluation of a computerized decision support intervention." *Journal of Internal Medicine*, 2004, **256**: 349-357.
5. Neilson E, Johnson K, Rosenbloom T, Dupont W, **Talbert DA**, Kaiser A, Miller R. "The impact of peer management on testing behavior." *Annals of Internal Medicine*, 2004, **141**: 196-204.
6. Rosenbloom ST, Aronsky D, **Talbert DA**, Miller RA. "Clinicians' perceptions of clinical decision support integrated into computerized provider order-entry." *International Journal of Medical Informatics*, 2004, **73**: 433-441.
7. Frey L, Li C, **Talbert DA**, Fisher D. "A review of the fourteenth international conference on machine learning." *Intelligent Data Analysis*, 1998, **2**: 245-255.

Conference Papers:

1. **Talbert DA**, Honeycutt MB, Talbert SR. "A Machine Learning and Data Mining Framework to Enable Evolutionary Improvement in Trauma Triage." submitted to the *International Conference on Machine Learning and Data Mining*.
2. Ramaswamy S and **Talbert DA**. "Assessment, Curriculum Evolution, and Student Learning-Pythagorean Triplets." *Best Assessment Processes VIII Symposium*, 2006.
3. Basu C, Merrell MA, Fellbaum C, **Talbert DA**, Kolpack J, Honeycutt M, Alonso R, Bloom J. "Automated Knowledge Discovery System (AKDS): A Business Case Study in Ontology Development and Use." *Proceedings of the 1st Workshop on Formal Ontologies Meet Industry*, 2005.
4. Bansal P, Aronsky D, **Talbert DA**, Miller RA. "The effect of a computer-based intervention on the appropriate use of arterial blood gas." *Proceedings of the American Medical Informatics Association 2001 Annual Symposium*, pp. 32-36, 2001.
5. Starmer J, **Talbert DA**, Miller RA. "Experience using a programmable rules engine to implement a complex medical protocol during order entry." *Proceedings of the American Medical Informatics Association 2000 Annual Symposium*, pp. 829-832, 2000.
6. **Talbert DA**, Fisher D. "An empirical analysis of techniques for constructing and searching k-dimensional trees." *Proceedings of the Sixth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, pp. 26-33, 2000.
7. **Talbert DA**, Fisher D. "Exploiting sample-data distributions to reduce the cost of nearest-neighbor searches with kd-trees." *Proceedings of the Third Symposium on Intelligent Data Analysis*, pp. 407-414, 1999.

8. **Talbert DA**, Fisher D. "OPT-KD: an algorithm for optimizing kd-trees." *Proceeding of the Sixteenth International Conference on Machine Learning*, pp. 398-405, 1999.
9. Fisher D, **Talbert DA**, "Inference using probabilistic concept trees." *Proceeding of the Sixth International Workshop on Artificial Intelligence and Statistics*, pp. 191-202, 1997.

Abstracts/Poster Presentation/Demonstrations:

1. Honeycutt M, **Talbert DA**, Talbert SR. "Interactive Knowledge Frontier Discovery with COBWEB-KFD." *Proceedings of the Florida Artificial Intelligence Research Society (FLAIRS)*, 2010.
2. Ey J, **Talbert DA**. "The Use of Field Dissimilarity Transformation Rules in a Regional Health Information Organization Simulator." *Proceedings of the American Medical Informatics Association Annual Symposium*, 2009.
3. Eckart B, Ey J, **Talbert DA**. "An Efficient Recursively Blocking Fellegi-Sunter Implementation for Automated Medical Record Linkage." *Proceedings of the American Medical Informatics Association Annual Symposium*, 2009.
4. Breece R, Ey J, Eckart B, Assink ML, **Talbert DA**. "Evaluating and Refining Record Matching Algorithms in the MidSouth eHealth Alliance." *Proceedings of the American Medical Informatics Association Annual Symposium*, 2009.
5. **Talbert DA**, Honeycutt M, Smith A, Talbert SR. "An Adaptive, Population-Sensitive Trauma Triage Decision Support Model." *Proceedings of the American Medical Informatics Association Annual Symposium*, 2009.
6. Talbert SR, **Talbert DA**. "A Comparison of a Decision Tree Induction Algorithm with the ACS Guidelines for Trauma Triage." *Proceedings of the American Medical Informatics Association 2007 Annual Symposium*, p. 1127, 2007.
7. Ey JL, Walker A, **Talbert DA**. "The dGrail Toolkit for Iterative Deterministic Record Linkage." *Proceedings of the American Medical Informatics Association 2007 Annual Symposium*, p. 951, 2007.
8. **Talbert DA**, Roush E, Velazco L, White C. "A Incremental Pharmacy Informatics Model for Use in a Rural Hospital." *Proceedings of the American Medical Informatics Association 2005 Annual Symposium*, p. 1131, 2005.
9. Santoro M, **Talbert DA**. "Predicting Cancer Type with Dimensionality-Reduced Gene Expression Micro-Array Data." *Proceedings of the American Medical Informatics Association 2005 Annual Symposium*, p. 1104, 2005.
10. Porter JP, Gentry C, **Talbert DA**. "A Grassroots Resource Locator System for Rural Healthcare Providers." *Proceedings of the American Medical Informatics Association 2005 Annual Symposium*, p. 1087, 2005.
11. Ernest JC, Bowser AS, Ghule S, Sudireddy S, Porter JP, **Talbert DA**, Kosa MJ. "Weathering Mindstorms with Drizzle and DIODE in CS0." *Proceedings of the Tenth Annual Conference on Innovation and Technology in Computer Science Education*, p. 353, 2005.
12. Talbert S, **Talbert DA**. "Developing a methodology to improve the allocation of specialized health resources for acutely injured persons." *Proceedings of the American Medical Informatics Association 2003 Annual Symposium*, p. 1025, 2003.
13. **Talbert DA**, Patel NR, Wright L, Hargrove F. "Implementing computerized decision support for ordering titratable drugs in a pediatric critical care unit." *Proceedings of the American Medical Informatics Association 2002 Annual Symposium*, p. 1177, 2002.
14. Hulgan TM, Hargrove F, **Talbert DA**, Rosenbloom ST. "A decision support system to promote oral antibiotic dosing." *Proceedings of the American Medical Informatics Association 2002 Annual Symposium*, p. 1050, 2002.
15. Rosenbloom ST, **Talbert DA**. "Surveying housestaff opinions regarding clinical decision support." *Proceedings of the American Medical Informatics Association 2002 Annual Symposium*, p. 1145, 2002.

16. Rosenbloom ST, **Talbert DA**, Aronsky D. "Integrating decision support into computerized physician order entry." *Proceedings of the American Medical Informatics Association 2001 Annual Symposium*, 2001.
17. Stone JS, **Talbert DA**, Geissbühler A, Aronsky D, Miller RA. "User communication and problem tracking: a multi-faceted approach to rapid application development." *Proceedings of the American Medical Informatics Association 2001 Annual Symposium*, 2001.
18. **Talbert DA**, Hargrove F. "Embedding drug dispensing logic to provide a more intelligent clinician order entry/pharmacy interface." *Proceedings of the American Medical Informatics Association 2001 Annual Symposium*, 2001.
19. Hamilton RM, **Talbert DA**, Stewart PW. "A data model to represent clinically oriented drug dosing rules." *Proceedings of the American Medical Informatics Association 2001 Annual Symposium*, 2001.
20. Geissbühler A, **Talbert DA**. "Theater-style demonstration: clinical decision-support, order entry, notes capture and knowledge maintenance at Vanderbilt." *Proceeding of the American Medical Informatics Association 1999 Annual Symposium*, p. 1207, 1999.
21. **Talbert DA**, Geissbühler A. "Design challenges for web-based database maintenance." *Proceeding of the American Medical Informatics Association 1999 Annual Symposium*, p. 1177, 1999.
22. **Talbert DA**, Geissbühler A, Hargrove F. "WizPharmacist: an intelligent pharmacy interface." Tennessee Biomedical Engineering Conference, 1999.

Grants:

1. *Computerized Decision Support to Facilitate Crisis Management by Ad Hoc Groups*. Tennessee Tech University Faculty Research grant, \$5000. (submitted)
2. Principal Investigator of TTU subcontract, *Computer Assisted Trauma Triage (CATT)*. National Institutes of Health Grant 1R15GM080697-01, 5/1/07 – 4/30/09. Total Direct Cost of Subcontract: \$59,895.
3. Senior Personnel, *SmartCard Demonstration Project*, State of Tennessee. 10/1/06 – 12/31/07, PI: Frank Hadlock, Total Direct Cost: \$434,783.
4. Co-Principal Investigator, *Volunteer e-Health Initiative Subcontract*, Vanderbilt University. 1/1/06 – 7/30/09, Total Direct Cost: \$164,913.
5. Principal Investigator, *Development with FiMatrix, Inc*, Financial Matrix, Inc. 2/25/05 – 06/31/05, \$7,802.
6. *Faculty Research Grant*, Tennessee Technological University, 8/04 – 5/05, \$3000.
7. Technical Lead, *Automated Knowledge Discovery System*, 8/1/03 - 7/31/05, Advanced Technology Program (National Institute of Standards and Technology), PI: Richard Neal, InRAD, LLC, Total Direct Cost: \$1,969,725. First year: consultant on grant; second year: lead researcher on subcontract with Tennessee Tech
8. Principal Investigator, *High Performance Network Connection for Tennessee Technological University*, 10/1/03 – 9/30/05, National Science Foundation Grant #0333656, Principal Investigator, Total Direct Cost: \$200,000.
9. Co- Principal Investigator, *On-Going Development for Keystone Business Solutions*, 8/03 – 05/04, Industrial Research Grant through SAIL, Co-Principal Investigator, \$16,912.
10. Co-Principal Investigator, *Web Site Development for NextRoof.com*, 8/03 – 05/04, Industrial Research Grant through SAIL, Co-Principal Investigator, \$14,262.
11. Co-Investigator, *EMILIE: Integrated Information for Collaborative Care*, 2/15/01 – 2/14/04, National Library of Medicine Grant 1 R01 LM06920-01A1, PI: Judy Ozbolt, PhD, RN, Total Direct Cost: \$886,098.