

CURRICULUM VITAE

Andrew J. Novobilski, Ph.D.

UTC Chief Research Officer
Assistant Provost for Research and Engagement
Professor and Department Head
Computer Science and Engineering
College of Engineering and Computer Science
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Academic Degrees and Fellowships

American Council on Education Fellowship, 2007-2008 Academic Year
The University of Nebraska at Lincoln, Office of the Chancellor

Doctor of Philosophy, May 2000, The University of Texas at Arlington, Arlington, TX.
Dissertation: Forecasting Time Series Data Using Naturally Selected Bayesian Networks

Master of Science in Computer Science and Engineering, May 1988, UT Arlington, Arlington, TX.
Thesis: Surface Fitting to Three Dimensional Voxel Data

Bachelor of Science, May 1982, Drexel University, Philadelphia, PA.
Major: Computer Science

Research Interests

Academic Leadership, Community Partnership & Engagement, Biomedical Informatics, Machine Learning, Cognitive Models, Bayesian Networks, Aviation, Genetic Programming, Human/Computer Interface, Object-oriented Programming, Parallel Computation, Computer Graphics.

Professional Experience

University of Chattanooga at Tennessee, Chattanooga, TN **August 2000 – Present**
Professor (Tenured, 2004), Department of Computer Science and Engineering

Assistant Provost for Research and Engagement; Chief Research Officer, July 2008 - present

- Supervise the Office of Grants and Research.
- Provide reporting support (as Chief Research Officer) to the UT System Office of Research.
- Work with university faculty to engage in, and grow, cross disciplinary research activities.
- Work with partners such as UT College of Medicine, the Chattanooga and Hamilton County Chambers of Commerce, and other organizations in Chattanooga to support UTC's role as an engaged metropolitan university.

ACE Fellow, University of Nebraska at Lincoln, Aug. 2007-2008

- Coordinated ad hoc UNL committee that participated in the Downtown Lincoln Association Retail Planning Activity.
- Developed a whitepaper on the issues and opportunities related to information management and technology within the university environment.

Department Head, Department of Computer Science and Engineering, April 2003 - present

- Assumed responsibility for department mid-2nd semester, producing required class scheduling and end of the year supervision of the department. Continued responsibility for serving 200 undergraduate students, 30 graduate students, eleven faculty members, four adjunct faculty members, and five graduate assistants.
- Added Electrical Engineering undergraduate and graduate programs (2005-2007) to Computer Science. The combined department served 300 undergraduate students, 40 graduate students, with 15 faculty members, three adjunct faculty members, and eight supported graduate assistants.
- Assisted faculty in securing \$500,000 in internal and external support (grants and equipment donations) for initiatives in Network Security, Information Forensics, Visualization, and Autonomous Vehicle Control.
- Strongly encouraged faculty/student research at both graduate and undergraduate levels resulting in 17 jointly authored conference papers within the department. This effort has also resulted in several departmental honors projects (undergraduate), and 12 students (seven graduated) working on their Masters Thesis instead of projects.
- Worked with UTC Cooperative Education Department to strengthen ties with the community and increase opportunities for our students. Examples include TVA, Mckee Foods and Microsoft Corporation.
- Strengthened the department's vision of being a "contributing citizen" to inter-college and Chattanooga Community projects that benefit from our faculty and students' knowledge exemplified by Capstone Projects that include support for the DARPA Grand Challenge, Chattanooga Airport Website, Neurological Music Therapy web delivery system (in collaboration with the College of Education), and RCP Corp Proof of Concept project (in collaboration with the Hamilton County Business Incubator).
- Encouraged faculty in funded efforts to reach underrepresented groups in the areas of science, technology, engineering and math by making its facilities available for teacher training and student education, working with community organizations such as Girls, Inc., and by recruiting students as facilitators.

- Supported departmental efforts to:
 - produce the successful ABET/CAC Interim Accreditation Report (2004).
 - develop a new Computer Engineering major, currently working towards ABET accreditation.
 - offer the NSA Certificate in Information Assurance.
 - recruit Assistant Professors in Electrical Engineering (2006) and Computer Science (2005).
 - receive State of Tennessee approval to offer BS Electrical Engineering degree.
 - offer courses to the community in the area of Information Forensics and Data Security.
 - develop proposal for new Ph.D. program in Computer Science and Engineering.
- Coordinated efforts to create a Masters Certificate in Medical Informatics with colleagues in Math, Nursing, Continuing Education, and industry partner Blue Cross Blue Shield of Tennessee.
- Served on the University Curriculum Committee and filled in as chair during the final 3 months of the university's move to a mandated 120 hour curriculum.
- Mentored faculty member to serve as Acting Department Head during 2007-2008 fellowship.

Director of Master of Science in Computer Science program May 2003-July 2004.

- Authored, with the assistance of the offices of Program Review and Institutional Research, the Computer Science program review self study required by the Tennessee Higher Education Commission (THEC).
- Mentored Computer Science faculty member who is the current graduate program coordinator to insure an orderly transition of responsibility.
- Worked with Graduate Coordinator, and Graduate Faculty in Computer Science to implement a revised Masters Program in Computer Science beginning with the 2005-2006 academic year. The new program was structured to allow UTC undergraduates to continue in the program for a Master's degree, increasing enrollment.

Research Faculty, The UT SimCenter at Chattanooga

- Work with SimCenter faculty in identifying opportunities of mutual interest to both Computational Engineering and Computer Science, including the establishments of relationships with Symantec and Computer Associates.

Adjunct Faculty, The UT College of Medicine Internal Medicine Department

- Collaborate with Internal Medicine, Emergency Medicine and Surgical faculty in research, by identifying partnering opportunities between medical faculty and faculty in the College of Engineering and Computer Science.
- Serve on the Research Advisory Committee that oversees the Internal Medicine Residents Research Requirement.

NovoTech Incorporated, Chattanooga, TN (also TX, CT)

May 1991 – 2002

President and Principal, Consultant to:

- Infocruiser, internet database appliance software development, Bioinformatics.
- Gateway 2000, convergence technology.
- GE Medical Systems, automated programming language translation.
- GTE, Large Project Software Development Audit and Improvement
- Lockheed-Martin Aerospace, in-field collection/access of space vehicle maintenance data.
- IBM, electronic charting of medical information.
- Waypoint Technologies, GIS/GPS mapping and asset tracking.
- Claritas, GIS Mapping and precision marketing.
- Phibro Corp., Commodity trading workstation.
- additional organizations including Federal Express, DEC, Ibis, and ATT.

- The Stepstone Corporation, Sandy Hook, CT** **February 1988 – April 1991**
 Senior Member of Technical Staff
 Design and development of Objective-C object-oriented programming language compiler, browser, and educational products. Support of Sales and Marketing efforts.
- Automation and Robotics Res. Inst., UT Arlington, TX** **September 1987 – January 1988**
 Graduate Research Assistant
 Studied the effectiveness of a Hueckel type operator to detect curvature in two dimensional images using self-developed image processing software for the Macintosh II
- Tandy Electronics R&D, Ft. Worth, TX** **October 1984 – September 1987**
 Project Leader
 Design and development of software systems including high level design, support libraries, user interface, and low level support routines (OS enhancements, Device Drivers, ROM-drive, etc.) for various personal computer projects.
- Microwave Development Labs, Inc., Natick, MA** **January 1984 – September 1984**
 Research Assistant
 Provided software development and data analysis for use in the design of microwave wave guide components.
- The Sperry Corporation, Southampton, PA** **September 1982 – September 1983**
 Associate Programmer.
 Developed information display and analysis software for Anti-Submarine Warfare applications

Publications

Books

1. Novobilski, Andrew. PenPoint Programming. Addison-Wesley. 1992.
2. Cox, Brad, A. Novobilski. Object-Oriented Programming: An Evolutionary Approach, 2nd Edition. Addison-Wesley. 1991.

Journal Articles

1. Lobo, Bento, A. Novobilski, S. Ghosh. "The Economic Impact of Broadband: Estimates from a Regional Input-Output Model", *The Journal of Applied Business Research*, Vol. 24, Number 2, 103-114. 2008
2. Yang, Li, C. Phuong, A. Novobilski, and R. Ege. "Trust-based Usage Control in Collaborative Environment", *The International Journal of Information Security and Privacy*, Volume 2, Issue 2, April-June 2008.
3. Kline, Jeffery, A. Novobilski, et al. "Derivation and Validation of a Bayesian Network to Predict Pretest Probability of Venous Thromboembolism", *The Annals of Emergency Medicine*, April 2005.
4. Dumas, Joe, A. Novobilski, D. Ellis, M. Pascal. "VR on a Budget: Developing a Flight Simulator in a Small Institution with Off-The-Shelf Hardware and Open Source Software", *The Journal of Computing in Small Colleges*, December 2002.
5. Oman, Paul, A. Novobilski, V. Rajlich, J. Harband, T. McCabe, J. Cross, L. Vanek, L. Davis, K. Gallagher, and N. Wilde. "Maintenance Tools", *IEEE Software*, pp. 59-65, May 1990.
6. Novobilski, Andrew. "Pictorial Design Notation", *Journal of Object Oriented Programming*, pp. 9-14, July/August 1990.

Conference Proceedings

1. Harris, Billy, A. Novobilski. "Virtual Worlds, Real Money," *The International Multiconference in Computer Science and Computer Engineering, July 2008*.
2. McCullough, Claire, A. Novobilski, F. Fesmire. "Use of Neural Networks to Predict Adverse Outcomes from Acute Coronary Syndrome for Male and Female Patients." *The Sixth International Conference on Machine Learning and Applications, 2007*
3. Novobilski, Andrew, F. Fesmire, R. Palmiero. "The Impact of Software Instrumentation on Clinical Evaluations" *ANNIE 2006*.
4. Joseph M. Kizza, L. Yang, A. Novobilski, K. Winters, "TMAS Capstone Project." *Proceedings of Computer Forensics Conference, Las Vegas, 2006*.
5. McCullough, Claire, A. Novobilski, F. Fesmire. "Prediction of Adverse Outcomes of Acute Coronary Syndrome Using Intelligent Fusion of Triage Information with HUMINT." *Conference on Multisensor, Multisource Information Fusions: Architecture, Algorithms, and Applications 2006*.
6. Ellis, Dawn, S. Karman, A. Novobilski, R. Haimes. "3D Visualization and Manipulation of Geometry and Surface Meshes." *44th AIAA Aerospace Sciences Meeting & Exhibit Reno, NV 2006*.
7. Tyler, Tom, A. Novobilski, J. Dumas, A. Warren. "The Utility of Perspecta 3D Volumetric Display for Completion of Tasks." *17th Annual Symposium Electronic Imaging Science and Technology 2005*.
8. Novobilski, Andrew, F. Fesmire, D. Sonnemaker. "Mining Bayesian Networks to Forecast Adverse Outcomes Related to Acute Coronary Syndrome." *The 17th International FLAIRS Conference 2004*.
9. Novobilski, Andrew, J. Kline, F. Fesmire. "Using a Genetic Algorithm to Identify Predictive Bayesian Models in Medical Informatics." *The International Conference on Information Technology (ITCC) 2004*.
10. Fesmire FM, Novobilski A. "First step in the Erlanger Artificial Intelligence Initiative: development of a Bayesian network utilizing initial triage history to risk stratify chest pain patients for thirty-day adverse outcome." [Abstract]. *Ann Emerg Med* 2003;42 (in press).
11. Novobilski, Andrew. "The Random Selection and Manipulation of Legally Encoded Bayesian Networks in Genetic Algorithms", *The 2003 International Conference on Artificial Intelligence (ICAI) 2003*
12. Novobilski, Andrew, F. Kamangar. "Bayesian Learning with Selective Subsets of Populations in Genetic Programming", *The Conference on Smart Engineering System Design: Neural Networks, Fuzzy Logic, Evolutionary Programming, Complex Systems and Data Mining (ANNIE) 2002*.
13. Novobilski, Andrew. "Pervasive/Invasive Computing: Two Sides of the Location Enabled Coin", *The 2002 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA) 2002*.
14. Novobilski, Andrew, F. Kamangar. "A Genetic Algorithm Based Approach for Discovering Temporal Trends Using Bayesian Networks", *The 6th World Conference on Systemics, Cybernetics, and Informatics. 2002*.
15. Novobilski, Andrew, F. Kamangar. "Average Percent Error Based Fitness Functions for Evolving Forecast Models." *The 14th International FLAIRS Conference, 2001*.
16. Novobilski, Andrew, F. Kamangar. "Inferencing Bayesian Networks from Time Series Data Using Natural Selection", *The 13th International FLAIRS Conference, 2000*.

17. Novobilski, Andrew, F. Kamangar. "A Two-Tiered Cognitive Model for Forecasting Time Series Data", *Second International ICSC Symposium on Neural Computation*, 2000.
18. Novobilski, Andrew, F. Kamangar. "A Genetic Algorithm Based Approach for Discovering Temporal Trends Using Bayesian Networks." *The 19th International Symposium on Forecasting*. 1999.

Invited Talks

1. "Data, Databases, and Discovery", *The UT College of Medicine Nuts and Bolts Research Symposium*. 2006
2. "Mining Bayesian Networks from Pulmonary Embolism Data", *Blue Cross Blue Shield of Tennessee Technical Series*. 2006
3. "Using Genetic Algorithms to Mine Bayesian Networks from Medical Data" *Southern Adventist University*. 2004
4. "Inferencing Bayesian Networks from Time Series Data Using Natural Selection", *The Chattanooga, TN Chapter of the IEEE*. 2001

Workshop Participation

1. *Organized, in partnership with IBM, Chattanooga Technology Council, and the Riverbend Technology Institute, a Roundtable on High Performance Computing, October 2006, focusing on emerging business opportunities for HPC.*
2. *Supported recruitment of, sponsorship development and volunteer support for the cre824 international web programming contest, 2005.*
3. *Organized, in partnership with IBM, UT College Of Medicine, and RTI, a Roundtable on Healthcare Informatics, October 2005, focusing on Electronic Medical Records.*
4. *Microsoft Research Faculty Summit, 2005.*
5. *Chattanooga Heart/Stroke Conference, University of Tennessee College of Medicine, Chattanooga Unit, 2005.*
6. *The ACM Special Interest Group on Computer Science Education Conference, 2004*
7. *Tennessee Bioscience Workshop, 2004.*
8. *10th Annual Internal Medicine Update. University of Tennessee College of Medicine, Chattanooga Unit. 2003*
9. *Workshop On Mathematical Models of Cancer. Vanderbilt University. 2002*
10. *9th Annual Internal Medicine Update. University of Tennessee College of Medicine, Chattanooga Unit. 2002*

Academic Support

Multiprocessor Objective-C Computer System for High Performance Computing. (PI) The THEC Center of Excellence for Applied Computational Science and Engineering. \$61,200. February 2006 – May 2007.

Development of a Proof of Concept Application. (PI) RCP, Inc. \$2,500. September 2005-June 2006.

- Neurological Music Therapy* (Co-I with Martha Summa-Chadwick, Pat Kopetz). The Chattanooga Community Foundation. \$19,845 April 2005 – present.
- Neurological Music Therapy* (Co-I with Martha Summa-Chadwick, Pat Kopetz). The UC Foundation Faculty Development Program. \$3,000 April 2005 – present.
- Identification and Classification of Regional Resources in Autonomous Control Technologies.* (PI) The Riverbend Institute. \$18,000. August 2004-May 2005.
- TeamUTC – The DARPA Grand Challenge* (Co-Advisor with Ed McMahon, Phil Kazemsky, Ron Bailey). Multiple sources. \$33,000 August 2004 – May 2005.
- Increasing Awareness of Opportunities for Women in Computing.* (PI) The Riverbend Institute. \$1,450. August 2004-May 2005.
- Microsoft Partner in Education.* Multiple projects. \$12,000 August 2004 – present.
- Development of Information Forensic Seminar.* (Co-PI with Joseph Kizza). The UC Foundation. \$10,000. August 2004-May 2005.
- Integration of Symantec Software with the Network Security Lab.* (Co-PI with Joseph Kizza, Kyle Anderson, Billy Harris). The Symantec Corp. \$50,000. January 2004-December 2005.
- The i*trACS Artificial Intelligence Initiative: Development of Bayesian and Neural Networks Utilizing Key Data Elements for Real Time Identification and Exclusion of Acute Coronary Syndromes.* (co-PI with Francis Fesmire, MD, Judd Hollander, MD, and William Baxt, MD), Dataset, October 2003.
- The Identification of Bayesian Network Models from Pulmonary Embolism Data.* BreathQuant, \$2,000, July 2003 – December 2003.
- Enhanced Information Perception Through Virtual Reality,* (Co-PI with Joe Dumas). The Lupton Renaissance Fund, \$69,900, May 2003 – December 2004.
- Integration of Virtual Reality Hardware with Open Source Flight Simulator Software in Support of Aviation and Space Education,* (Co-PI with Joe Dumas), The Wolf Aviation Foundation, \$9,360, September 2001 – May 2002.
- Integration of Virtual Reality Hardware with Open Source Flight Simulator Software in Support of Aviation and Space Education,* (Co-PI with Joe Dumas), The UTC Challenger Center, \$3,500, September 2001 – May 2002.
- Analysis of Data Produced by Natural Selection of Forecast Models,* (PI), Center of Excellence in Computer Applications, \$1,418, January 2001 – May 2001.

Industry Research Oriented Support

- Database-centric Market Opportunities in Bioinformatics,* (As NovoTech, Inc.). InfoCruiser, \$7,500, December 2001 - January 2002.
- Convergence Enabling Technology using Social Interfaces,* (As NovoTech, Inc.). Gateway 2000, \$680,000, January 1997 – June 1998.
- Development of a Verifiable Translation Methodology for Large Objective-C Codebases to C++,* (As NovoTech, Inc.). GE Medical, \$100,000, January 1997 – June 1998.
- Large Project Software Technology Audit with Implementation of Suggested Improvements,* (As NovoTech, Inc.). GTE, \$200,000, October 1996 – May 1997.

Competitive Assessment of Integrated Software Development Environments for C++, (As NovoTech, Inc.). IBM, \$74,000, September 1996 – November 1996.

A Prototype Based Study on the Effectiveness of Pen-based Computers for Remote Collection of Data, (As NovoTech, Inc.). Lockheed Martin, \$470,000, November 1993 – December 1995.

Requirements Gathering, Software Design, and Implementation Strategy for a PC Based Electronic Medical Records Package, (As NovoTech, Inc.). Spacelabs Medical, \$70,000, January 1993 – April 1993.

A Comparative Study of Object-Oriented Language Models for Use in Building a Common Object Broker, (Co-PI with Brad Cox, Zolt Dombrowski and Ken Lehrman at Stepstone), IBM, \$500,000, April 1991– June 1991.

Professional Societies and Activities

University Activities:

Member of the UTC Undergraduate Curriculum Committee (Chair, Spring '04)
 Member of the Council of Academic Department Heads (Chair, '04 '05)
 Member of the Riverbend Technology Institute Advisory Board
 Faculty Participant with the IEEE Computer Society and Linux Users Group
 Member of the UTC Interdisciplinary Judicial Studies Group
 Voice of the UTC Marching Mocs (Football Marching Band '03-'06)

Community Activities:

Member of the Chattanooga Technology Council Board of Directors, President 2005-06
 Member of the Chattanooga Java User's Group Advisory Board
 Member of the Southern Adventist University Computer Science Advisory Board

Departmental Activities:

Faculty, Department Chair, Dean and Associate Provost Search Committees
 Preparation for first departmental accreditation by the Computing Accreditation Commission of ABET in 2002. Awarded for 2000-2004.
 Coordinator for Departmental Honor awards, 2002-2003

Editorial:

Object Magazine, editor, special issue on Frameworks, 1996
 Object Magazine, editorial board, 1991-1997

Reviewer:

National Science Foundation Equipment Grant Program, Spring '04
 Journal of Object Oriented Programming
 Object Magazine
 Distributed Object Computing
 Addison-Wesley, Prentice-Hall
 IEEE Software

Program Committee:

Co-chair, FLAIRS 2003 - 2005 Special Track on Artificial Intelligence in Medicine
 Uncertainty Track for FLAIRS 2001, 2002, 2003

Member:

Association for Computing Machinery
 Institute of Electrical and Electronic Engineers

Courses Taught

- Computer Science Capstone Projects Course (Undergraduate/Graduate)
- Bioinformatics (graduate), with Dr. Peggy Kovach in the Biology Dept.
- Data Mining and the Web (graduate)
- Developed, with Jeff Kline, MD, a web-based Continuing Medical Education seminar on predictive medical techniques.
- Programming Languages (graduate/undergraduate)
- Introduction to Artificial Intelligence (graduate/undergraduate)
- Statistical Machine Learning (graduate)
- Neural Networks (graduate)
- Advance Algorithms and Data Structures (undergraduate)
- Introduction to Computer Science using Java (undergraduate)
- Introduction to Data Structures using Java (undergraduate)
- Software Project Development (Senior Design Project)
- Unix Programming (professional)
- Objective-C Programming (professional)
- Object-Oriented Design (professional, course editor)
- PenPoint Programming (professional)

Honors and Awards

- Distinguished Faculty Rating, 2005, 2006
- Elected to Sigma Xi Research Society and Upsilon Pi Epsilon Computer Science Honor Society, May 2004.
- UT Chattanooga Outstanding Computer Science Teaching Award, November 2001
- IEEE Tools Fair Award for Maintenance Tools, May 1990

Graduate Student Research Activities

- Alex Yates (MS Thesis, 2007). "Parallel Extensions to Objective-C"
- Michael Wade (MS Thesis, 2007) "An Investigation of the Sudoku Puzzle."
- Hirsohi Yamakawa (MS Thesis, 2007). "Cross Cultural Issues in International Website Design."
- Miyuki Tatsumi (MS Thesis, 2007). "Comparing Author Keywords to Reader Keywords in Search Applications."
- Tom Tyler (MS Thesis, 2005): "The Utility of Perspecta 3D Volumetric Display for Completion of Tasks"
- Abe Mishler (MS Thesis, 2005). "A Method of Cloaking Passive RFID Medical Implants in Humans"

Undergraduate Student Research Activities

- Nathan Dalton (BS/Honors Project, 2007). “Measuring the impact of Software Engineering on Education.”
- David Chilton (BS/Honors Project, 2006): “Simulating Changes in an Interstellar Ice Due to Photolysis Over Time”
- John Kilby (BS/Honors Project, 2005): “A Probability Based Agent for Learning Emotions in Texas Hold ‘em”
- Adam Cofer (BS/Dept. Honors Project, 2003): "A Probabilistic Approach to Learning Playing Strategies for Mancala"
- Jesse St. Charles (BS/Honors Project, in progress). “A Graphical Teaching Environment for Swarm Theory.”
- Rachel Palmero (UHON Project Participation 2004-05): "Analysis of the Impact of Physician’s Opinion on Diagnostic Accuracy.””
- Alma Cemerlec (UHON Project Participation 2003-04): "Implementation of Stereo Rendering Points in Flight Simulation Package"
- Sonja Petrovic (UHON Project Participation 2002-03): "Identification of Stereo Rendering Points in Flight Simulation Package"
- Mark Pascal (Project Participation 2001-02): "Addition of Voice Notification to Flight Simulation Package"
- David Sonnemaker (Project Participation 2002-03): "Identification of Causal Relationships in Patient Data Related to Abdominal Aortic Aneurysms"