CURRICULUM VITAE

Andrew J. Novobilski, Ph.D.

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Associate Professor
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Academic Degrees

Doctor of Philosophy, May 2000, with emphasis in Artificial Intelligence, The University of Texas at Arlington, Arlington, TX.
Advisor: Farhad Kamangar
Dissertation Committee: Farhad Kamangar, Diane Cook, Piotr Gmytrasiewicz, Lawrence Holder, Lynn Peterson
Topic: Forecasting Time Series Data Using Naturally Selected Bayesian Networks

Master of Science in Computer Science and Engineering, May 1988, with emphasis in Computational Mathematics, University of Texas at Arlington, Arlington, TX.
Advisor: Farhad Kamangar
Topic: Surface Fitting to Three Dimensional Voxel Data

Bachelor of Science, May 1982, with major in Computer Science, Drexel University, Philadelphia, PA.

Research Interests

Biomedical Informatics, Artificial Intelligence, Aviation, Genetic Programming, Human/Computer Interface, Cognitive Models, Bayesian Networks, Object-oriented Programming, Parallel Computation, Computer Graphics.

Courses Taught

- Bioinformatics (graduate)
- Data Mining and the Web (graduate)
- Worked with Jeff Kline, MD on a Continuing Medical Education seminar discussing predictive medical techniques.
- Programming Languages (graduate/undergraduate)
- Introduction to Artificial Intelligence (graduate/undergraduate)
- 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
- 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

Technical Development Skills

Programming Languages

C, C++, Objective-C, Java/Swing, Matlab, Python, SQL, Visual Basic, PERL, Microsoft Foundation Classes, Active-X, X-windows/Motif, Standard Template Library, Common Object Model, Lex/Yacc, 80n86 asm, 680n0 asm, Macintosh Programmers Workshop, FORTRAN, LISP.

Operating Environments

UNIX/Linux, Windows 3.1/95/NT/2000, PenPoint, NeXTstep, MS-DOS, Mac-OS.

Special Platforms

Matlab, CLIPS Rule-based System, SoftICE, MPI/PVM, Sequent, nCube.

Professional Experience

University of Chattanooga at Tennessee, Chattanooga, TN August 2000 – Present

Associate Professor (Tenured, 2004), Department of Computer Science

Department Head, Department of Computer Science and Electrical Engineering, Aug. 2005

- Responsibility for department increased to include the Electrical Engineering undergraduate and graduate programs. The combined department serves 300 undergraduate students, 40 graduate students, 14 faculty members, three adjunct faculty members, six graduate assistants and one very supportive departmental administrative assistant.

Department Head, Department of Computer Science as of April 2003

- 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, eight faculty members, three adjunct faculty members, five graduate assistants and one very supportive departmental administrative assistant.
- Supervised department's effort to reduce program hours to meet new requirements. Also served on the University Curriculum Committee and filled in as chair during the final 3 months of the university's move to the 120 hour curricula.
- Worked with faculty members to produce the successful Interim Accreditation Report.
- 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.
- Assisted faculty in securing $300,000 in internal and external support (grants and in-kind donations) for initiatives in Network Security, Information Forensics, Visualization, and Autonomous Vehicle Control.

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). Circumstances necessitated this report be completed on extremely short notice at the end of the 2003 academic year.
- Coordinated the outside evaluation process by identifying reviewer, coordinating evaluation visit and completing required reports. The Computer Science Master's Program received a perfect score on all aspects of the THEC criteria by the external reviewer.
- Served on the Graduate Council as representative of the computer science program.
- Worked with Computer Science faculty member who is the current graduate program coordinator to insure an orderly transition of responsibility and an initial set of program goals to be pursued in the immediate future.

Research Faculty, The UT SimCenter at Chattanooga

- Worked 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.

NovoTech Incorporated, Chattanooga, TN (also TX, CT) May 1991 – 2002

President and Principal, Consultant to:
- Aerotec, Low cost Stereo 3D visualization of terrain data
– 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
– The Stepstone Corporation, the Objective-C compiler for Macintosh.
– Lockheed-Martin Aerospace, in-field collection/access of space vehicle maintenance data.
– IBM, electronic charting of medical information.
– IBM, competitive product comparison of software development tools.
– 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, GTE, 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

Pelmor Labs., Newtown, PA January 1977 – June 1982

Programmer (part time)
Development of inventory and cost estimating software for plastics foundry.

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. 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.
2. 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.
3. 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.
4. Novobilski, Andrew. "Pictorial Design Notation", *Journal of Object Oriented Programming*, pp. 9-14, July/August 1990.

Conference Proceedings

1. Ellis, Dawn, S. Karman, A. Novobilski, R. Haimes. "3D Visualization and Manipulation of Geometry and Surface Meshes." *To be presented at the 44th AIAA Aerospace Sciences Meeting & Exhibit Reno, NV 2006.*
2. 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.*
3. Novobilski, Andrew, F. Fesmire, D. Sonnemaker. "Mining Bayesian Networks to Forecast Adverse Outcomes Related to Acute Coronary Syndrome." T*he 17th International FLAIRS Conference 2004.*
4. Novobilski, Andrew, J. Kline, F. Fesmire. "Using a Genetic Algorithm to Identify Predictive Bayesian Models in Medical Informatics." T*he International Conference on Information Technology (ITCC) 2004.*
5. 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).
6. Novobilski, Andrew. "The Random Selection and Manipulation of Legally Encoded Bayesian Networks in Genetic Algorithms", *The 2003 International Conference on Artificial Intelligence (ICAI) 2003*

7. 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.*
8. 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.*
9. 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.*
10. Novobilski, Andrew, F. Kamangar. "Average Percent Error Based Fitness Functions for Evolving Forecast Models." *The 14th International FLAIRS Conference*, 2001.
11. Novobilski, Andrew, F. Kamangar. "Inferencing Bayesian Networks from Time Series Data Using Natural Selection", *The 13th International FLAIRS Conference*, 2000.
12. Novobilski, Andrew, F. Kamangar. "A Two-Tiered Cognitive Model for Forecasting Time Series Data*", Second International ICSC Symposium on Neural Computation*, 2000.
13. Novobilski, Andrew, F. Kamangar. "A Genetic Algorithm Based Approach for Discovering Temporal Trends Using Bayesian Networks." *The 19th International Symposium on Forecasting*. 1999.

Workshop Participation

1. *Workshop On Mathematical Models of Cancer. Vanderbilt University. 2002*
2. *9th Annual Internal Medicine Update. University of Tennessee College of Medicine, Chattanooga Unit. 2002*
3. *10th Annual Internal Medicine Update. University of Tennessee College of Medicine, Chattanooga Unit. 2003*
4. *The ACM Special Interest Group on Computer Science Education Conference, 2004. Funded through an competitive internal grant.*
5. *Tennessee Bioscience Workshop, 2004.*
6. *Microsoft Research Faculty Summit, 2005.*

Undergraduate/Graduate Student Research Activities

- David Chilton (BS/Honors Project, expected 12/05): "Simulating Changes in an Interstellar Ice Due to Photolysis Over Time"
- Tom Tyler (MS Thesis, 2005): "The Utility of Perspecta 3D Volumetric Display for Completion of Tasks"

- John Kilby (BS/Honors Project, 5/05): "A Probability Based Agent for Game Playing."
- 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"
- Adam Cofer (BS/Dept. Honors Project, 5/03): "A Probabilistic Approach to Learning Playing Strategies for Mancala"
- Ben Murray (BS/Honors Project, 5/03): "A Self Adaptive Information Filter for Web Search Result Ordering."
- David Sonnemaker (Project Participation 2002-03): "Identification of Causal Relationships in Patient Data Related to Abdominal Aortic Aneurysms"
- Chang Phong (MS Thesis Student), Project in Artificial Intelligence Under Discussion.

Professional Societies and Activities

University Activities:

Faculty Participant with the IEEE Computer Society and Linux Users Group
Faculty Advisor for the Mentor Net Program
Member of the UTC Interdisciplinary Judicial Studies Group
. Member of the UTC Undergraduate Curriculum Committee (Chair, Spring '04)
Member of the Council of Academic Deptartment Heads (Chair, '04 '05)
Participant in University Recruiting Activities
Undergraduate Student Advisor for Computer Science Majors
Voice of the UTC Marching Mocs (Football Marching Band)

Community Activities:

Member of the Chattanooga Java User's Group Advisory Board
Member of the Chattanooga Technology Council Board of Directors
Member of the Southern Adventist University Computer Science Advisory Board
Member of the UT College of Medicine, Chattanooga Unit Internal Medicine Research Advisory Board

Departmental Activities:

Faculty, Department Chair, and Dean Search Committees
Preparation for first departmental accreditation by the Computing Accreditation Commission of ABET in 2002. Awarded for 2000-2004.
Preparation and Successful Execution of THEC Graduate Program Review in 2003.

Editor:

Object Magazine,
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

Interests:

Private Pilot
Youth Enrichment Activities
Musician

Academic Support

Neurological Music Therapy (Co-I with Martha Summa-Chadwick, Pat Kopetz). The Chattanooga Community Foundation. $19,845 April 2005 – present.

Identification and Classification of Regional Resources in Autonomous Control Technologies. (PI) The Riverbend Institute. $10,000. August 2004-May 2005.

TeamUTC – The DARPA Grand Challenge (Co-Advisor with Ed McMahon, Phil Kazemersky, 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. $10,000 August 2004 – present.

Development of Information Forensic Seminar. (Co-PI with Joseph Kizza). The UC Foundation. $10,000. August 2004-May2005.

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) EMSW, Access to Dataset and Possible Funding, 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.

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.

References

Letters of recommendation are available upon request.

- Mr. Daniel Britt
  Space Systems
  Lockheed Martin Astronautics
  Denver, CO
  daniel.l.britt@lmco.com

- Dr. Diane Cook, Professor
  Department of Computer Science and Engineering
  University of Texas at Arlington
  Arlington, TX 76019
  (817) 272-3606, cook@cse.utc.edu

- Dr. Brad Cox, Founder
  Virtual School, Inc.
  9940 Bent Tree Lane
  Manassas VA 20111-4234
  (703) 361 4751, bcox@virtualschool.edu

- Dr. Farhad A. Kamangar, Associate Professor
  Department of Computer Science and Engineering,
  University of Texas at Arlington
  Arlington, TX 76019
  (817) 272-3617, kamangar@cse.utc.edu

- Dr. Francis Fesmire, MD, FACEP
  Director, Heart Stroke Center
  Erlanger Medical Center, UT College of Medicine
  P.O. Box 4045
  Chattanooga, TN 37405
  (423) 870-2363, ffesmire@comcast.net

- Dr. Jeffrey Kline, MD
  Director of Research, Dept. of Emergency Medicine
  Carolinas Medical Center
  P.O. Box 32861
  Charlotte, NC 28232

- Mr. George Seff, Principal
  Limbic Systems
  3124 19th Street North
  Arlington, VA 22201
  (703) 841-9488, gaseff@bellatlantic.net