

Résumé

- Mixed background of academic and corporate research and project management.
- Computer science university professor with an established record of research into large distributed systems, data science, machine learning, mobile, biomedical engineering.
- {Director, Program Manager, VP, Director} respectively, at {Microsoft, Google, Infosys, Vericast} working from the corporate side with world leaders in the private sector and academia to establish/manage research/incubation centers/programs in parallel programming, cloud computing, social, data science, medical computing.
- Computer Programming Experience: Languages: {Go, Julia, Python, Java, Javascript, C++, C, C#, SQL} Cloud: {Databricks, AWS, SageMaker, Google Cloud}; Frameworks: {Spark, PySpark, TensorFlow, Keras, Numpy, GoNum}
- Designed and developed multiple end-to-end solutions featuring Machine Learning, Data Science, Bayesian Inference, that were adopted by DARPA and several corporations. Summary of projects is listed in the research activities section near the end of this document. More details available on request.

Honors and Awards

- Listed in “Who is Who” in American Education.
- Winner of the Vanderbilt Dissertation Award, Graduate School of Vanderbilt University, June 1987.
- Received the North-American Research Fellowship, National Science Foundation (NSF) March 1995.
- Visiting researcher, Oak Ridge National Labs, Oak Ridge TN, Summer 1996.
- Academic Fellow, South Carolina Research Authority (SCRA), Charleston SC, 1998-1999.
- Best Academic Relations Manager of the Year, Microsoft, 2005.
- 2008 Golden Nugget, University of Texas at El Paso, awarded to the most distinguished alumnus in engineering.

Education History

BSEE from the University of Texas at El Paso (UTEP)

MS in Biomedical Engineering from the Center for Research & Advanced Studies of the National Polytechnic Mexico (CINVESTAV), 1980. My Master’s degree had as a requirement the “basic sciences” of the MD program (Anatomy, Physiology, Embryology, Ecology, Biochemistry, Neurophysiology, Pharmacology, Histology, and Neural Anatomy). CINVESTAV is the elite school for graduate studies and advanced research in Mexico, and a leading institution in Latin America. CINVESTAV was founded by MIT’s Norbert Wiener and Harvard’s Arturo Rosenblueth, the pioneers of Cybernetics.

PhD in Biomedical and Electrical Engineering from Vanderbilt University, 1988

PROFESSIONAL EXPERIENCE

August 2023 to Date: Advisor of AI in Manufacturing, Bernal Industrial. Working part-time to provide insights related to AI in Manufacturing.

June 2022 to August 2023: Director of Data Science, Vericast. Working full-time helping Vericast to lead a team of data scientists and engineers to conduct exploratory research aimed at the design and development of innovative Data Science methods, solutions and platforms.

October 2021 to June 2022: Consultant/advisor to Databricks Corp. I am working part-time with Databricks helping them to improve their internal instructional material related to Data Science, AI etc.

June 2017 to Oct 2019: Trustee of Infosys Foundation USA. The Foundation mission is to contribute to CS and Maker Education in the USA through signature events such as the Pathfinders Institute with Indiana University, in which we trained 600+ K-12 teachers from 45 states in the USA so that they can teach CS and making in their school districts. In Feb 2019 I was appointed by the LT Governor of North Carolina to the CS Steering Committee, with the goal of articulating and presenting CS standards to the NC State Board of Education at the end of this current school year.

June 2017 to Oct 2019: Dean and VP of Education, Infosys Corp. Infosys is a global leader in next-generation IT services and consulting, with 200,000 employees, working with customers in 45 different countries across the globe. Infosys announced in early 2017 an ambitious initiative to open Innovation Centers across the USA and create 10,000 new jobs in the next 4 years. I am part of the leadership team; our focus is to help thousands of Infosys IT professionals working in the US gain the skills to succeed in the changing landscape of computing in the 21st century. To date, we opened innovation centers in Indianapolis, Providence RI, Raleigh NC, Hartford CT, Richardson TX and Phoenix AZ.

June 2013 to June 2017: Professor of Computer Science, Georgia Southern University.

June 2013 to June 2016: Associate Dean for Faculty and Research, College of Engineering and IT, Georgia Southern University. The College of Engineering was founded in November 2012, as the second college of engineering in the state of Georgia. My main goal was to put the college on the map by creating a culture of STEM and STEM-ed research.

Oct 2012 to May 2013: Dean of Technology, American Sentinel University: Online institution I joined as Dean of Technology. I aligned the graduate CS programs along the following topics: Big Data + Cloud Computing + Mobile + Modeling and Simulation.

2009 – 2012: Principal Research Manager, Microsoft Research.

Launched and managed multi-million research/incubation projects involving Microsoft, Intel, and elite universities worldwide. Responsibilities included building teams, identifying research priorities, leading research projects, incubating best ideas, transferring IP into products.

- Director of the UPCRC (Universal Parallel Computing Research Centers) at Microsoft, Intel, UC Berkeley, University of Illinois. UPCRC is a multi-million project aimed to explore and deeply understand most promising directions in parallel computing. Ideas from UPCRC projects have been integrated into Microsoft and Intel products. The University of Illinois launched a 12-faculty center with more than 50 doctoral students. UC Berkeley launched ParLab, with 8 faculty and more than 60 doctoral students. Through numerous interactions with both schools, Microsoft's incubation and product teams shaped their directions on parallel programming patterns and the development of 'just-in-time' specialization techniques embedded in the run-time portion of the software stack. Interactions with the IE explorer team resulted in performance and security related improvements. Interactions with the software tools teams helped shape their directions on software annotations, parallel debugging, and mobile applications, among others.
- Program Manager of High-Performance Computing (HPC) projects involving the University of Tennessee, Oak Ridge National Lab, Rice University, and the University of Texas at Austin. Projects had deliverables for Microsoft's product teams and/or the open-source community.
- Director of Microsoft's projects related to UC Berkeley AMPLab (Algorithms Machines, People). AMPLab stands for "Algorithms, Machines, and People Lab". AMPLab is one of the most promising research initiatives on the new field of big data. AMPLab's focus was on the intersection of social networks, machines (computers, data centers, mobile) and machine learning algorithms for large scale processing.
- Manager of Microsoft NSF/CiC (Computing in the Cloud) program, involving ~28 leading US Universities. Program established to accelerate innovation in cloud computing through research collaborations with academia and government. Program provided access to large scale computing resources to help academia concentrate on a variety of engineering/science topics at large scale.
- Manager of Microsoft Academic Cloud Program with the European Union involving ~28 leading European universities, and the National Academies of Science in Japan and Australia (~12 universities). Programs established to accelerate innovation in cloud computing through research collaborations with academia and governments. Program provided access to large scale computing resources to help academia concentrate on a variety of engineering/science topics at large scale.

2007 – 2009: Sr. Manager, Google Research.

- Created multi-million programs with international visibility aimed at pursuing research into Google's priority areas at top universities world-wide.
- Created an internal 'social network' of scientists and engineers to identify Google's top research priorities.
- Created Google Research Awards, a program to support research in Google's priority areas at top universities world-wide.
- Program Manager of the Google Computing Cloud (CLuE) program with the NSF, involving 17 US universities. Program established to accelerate innovation in cloud computing through research collaborations with academia and government. Program provided access to large scale computing resources to help academia concentrate on a variety of engineering/science topics at large scale.
- Part of cross-functional team that drove and organized Google Research Faculty Summits
- Created programs and mentored program managers who operated : Google Doctoral Fellows, Google Energy Research Program, Google Focused Research Awards, Google/WPP Marketing Research Awards.

2004 – 2007: Program Manager, Microsoft

Relation building, award-winning keynotes and technical talks at technical/academic conferences and workshops involving hundreds of attendees.

- Keynote speaker for numerous academic/corporate workshops and conferences worldwide.
- Lectured at dozens of Computer Science and Engineering Departments worldwide on topics related to computing innovation, artificial intelligence, robotics, machine learning, programming languages, systems.
- Advised and influenced academic leaders (Deans, CS Chairs) worldwide on cutting- edge computing topics.
- Member of numerous advisory boards at CS Departments and Engineering Colleges worldwide.
- Helped CS faculty across the globe to identify research priorities and create new courses and programs in computer science.

1988 – 2004 Professor of Computer Science and Engineering, University of South Carolina.

30% Teaching, 70% Research. Responsibilities included team building, leading projects and writing fully integrated software solutions in a variety of scenarios, including research, incubation, manufacturing and production. Research contracts with the government (NSF, SCRA), the military (DARPA, National Guard, US Army), and the private sector (Microsoft, NCR, Walmart, Teradata, GE). Most of the work was about data analytics, statistical techniques.

RESEARCH ACTIVITIES

- Designed and deployed AI-based inventory systems and schedulers for the world's largest refrigerators plant, (GE Appliances) located in Louisville, KY. After spending a summer at the GEA, demonstrated advanced AI techniques to resolve scheduling problems affecting inventories at several plants. Obtained funding from GEA and GE R&D through the University of South Carolina for two years to implement and deploy systems. Built a team and led software development, testing, and deployment at the GEA plant.
- Designed and deployed a network of real-time data collection and statistical quality control systems for the manufacture of superconducting wire/tape used in MRI magnets for GE Medical Systems. After spending one summer at the GEMS plant to understand processes/problems. I wrote a proposal describing a solution. Obtained funding from GEMS through the University of South Carolina. Built and led a team whose deliverables included a distributed computer system which consisted of real-time data collection stations, data servers, and back-end systems for performing statistical analysis and for discovering pieces of material that were out of spec, or processes that were not performing as expected. The predictions were based on a blend of statistical and machine learning methods. Project was a pioneering effort in what today is called 'Big Data Analytics'.
- Research fellow at the Advanced Technology Institute (ATI) of the South Carolina Research Authority (SCRA) during sabbatical from university. Developed a data mining system which was part of a large patient evidence-based initiative, funded by the US Department of Commerce, and tested at Kaiser Permanente in Aurora, CO. System collected data from patient records, learned parameters to make predictions, and assisted physicians to do evidence-based diagnosis from those records.
- Obtained funding for research into large scale data science from Teradata, NCR and Wal-Mart. Deliverables included APIs for Bayesian inference in C++ and Java, which ran on top of the Teradata architecture. At the

time, Teradata was one of the largest distributed systems in the world. Offered graduate courses at USC on large scale distributed data mining based on the experience learned during this project. Recruited team to develop and deliver software.

- Lead investigator on a research contract with the SC National Guard that examined the effectiveness of an on-board vibration system installed in Boeing AH-64 Apache helicopters. Built a team to collect sensor data recorded during the flights and wrote machine learning software for predictive modeling from data.
- Built a team to design a Bayesian tracking system for a project funded by the DARPA/ANTS program. System was tested at the DARPA/MITRE facilities. Performance exceeded expectations. DARPA program managers offered additional funding to write and deliver tracking software infrastructure that was used by participants of Phase II of the DARPA/ANTS program.
- Co-principal investigator in a contract with the U.S. Army Tank and Automobile Command, deliverables included modules for sensing geo data and software for performing statistical analysis.
- Designed and developed software used in a Holter system (EKG and blood pressure monitor) built by Advanced Medical Products (now Advanced Biosensor). The system records EKG and blood pressure for 24 hours and performs data analysis. System was the first in the world to offer EKG/BP data transmission via the internet.

1985 – 1988 Graduate Student, Vanderbilt University.

June 1984 – December 1984: Advisor to Dr Guillermo Soberon, Secretary of Health of the Mexican Government. Involved in high-level advisory committees on computer technology.

May 1982 – June 1984: Head of the Computer Services for Research, School of Medicine, National University of Mexico (UNAM). Returned to the position of Head for Computer Services for Research.

January 1981 – April 1982: Professor, Founding Co-Director of the Center for Graduate Studies, Inst. Tecnológico de Chihuahua, Mexico. Taught graduate courses in Numerical Analysis, Programming Languages, and Design of Computer Systems. Besides teaching duties, I was the co-writer of the research proposal for infrastructure which was funded by the Mexican National Council of Technology (CONACYT) to provide research infrastructure for the Center. The total funding was slightly more than one million dollars. We obtained additional funding from the Bank of Interamerican Development or BID.

August 1975 – December 1980: Head of Computer Services for Research, School of Medicine, National University of Mexico (UNAM). Started from scratch the Computer Services for Research of the largest institution for medical research in Latin America. The activities included planning and management of the unit, selecting and training personnel, writing proposals, getting funding for internal and external research projects, leading and/or programming a host of software projects.

SCHOLARLY ACTIVITIES

1. Keynote speaker for more than 60 academic/corporate workshops and conferences worldwide
2. Taught courses in computer architecture, computer languages, data structures, algorithms, data science, artificial intelligence, operating systems, web services, distributed systems, sensor networks, medical computing.
3. Supervised more than 30 Master Theses. Supervised 15 PhD Dissertations.
4. Have written 4 book chapters on data mining and Bayesian inference for biomedical and industrial applications.
5. Have written more than 60 refereed publications in the areas of biomedical engineering, distributed systems, high performance computing, Bayesian inference, data science, sensor networks, Java, .NET and C# programming.
6. Invited to deliver more than 30 seminars, workshops, and keynotes worldwide (Argentina, Canada, Chile, Costa Rica, Mexico, Poland, Portugal, Spain, USA) on a variety of computing topics.
7. Written 35 research proposals, 18 of which were funded by NSF, DARPA, DOD, NCR, WAL-MART, SCRA, Microsoft Research, GE Medical Systems, GE Appliances, and others for a total of \$9,108,682.00 US Dollars
8. Reviewer for DARPA, NSF, CONACyT (Mexican Science Council), Canadian Research Council.

9. Organized the Microsoft Workshop on (HPC) High Performance Computing with Dr. Jack Dongarra at the University of Tennessee, Nov 2004
10. Organized the Microsoft Workshop on Software Integrated Systems, with Dr. Janos Sztipanovits, Vanderbilt University, Nov 2004.
11. Organized the Microsoft Workshop on Software Development Life Cycle for TWC, Microsoft ACE group, Georgia Tech, November 2005
12. At various times I have been a member of the following Computer Science/Engineering Industrial Advisory Boards: NCSU, UNC-Charlotte, Vanderbilt University, University of Missouri University-Columbia, University of Missouri-Rolla, Saint Louis University, University of Tennessee-Chattanooga, Georgia Tech College of Computing.
13. Member of the 2009 Tapia Doctoral Consortium, Portland OR
14. Deputy Chair of the 2011 Tapia Conference (with Dave Patterson, UC Berkeley).
15. Chair of the 2011 Tapia Doctoral Consortium, San Francisco.
16. Chair of the 2013 Tapia Doctoral Consortium, Washington DC.
17. General Chair of the 2013 Tapia Conference, Washington DC.
18. Member of the NSF Taskforce on Cyber Education, October 2010.
19. Invited to the NSF/CRA/CCC Online Education Workshop, February 2013, Washington DC

CORPORATE (MANUFACTURING) EXPERIENCE WHILE at USC

1. Designed and developed expert system schedulers for the largest refrigerators plant in the world, (GE Appliances) located in Louisville, KY.
2. Designed and developed a network of real-time data collection for data mining and statistical process quality assessment for the manufacture of superconducting tape used in the manufacturing of MRI Magnets for GE Medical Systems.
3. Designed and developed a process assessment tool for GE Medical Systems, used to organize information about a large and complex manufacturing process (manufacture of superconducting tape for MRI) using Bayesian network models.
4. Architected and developed a data mining system, part of a large patient evidence-based initiative, funded by the US Department of Commerce HIIT, deployed by Kaiser Permanente in Aurora, Colorado. System was designed while I was a senior academic advisor for the Advanced Technology Institute (ATI) of the South Carolina Research Authority (SCRA).
5. Designed the Bayesian tracking system and the software infrastructure that DARPA delivered to the participants of the ANTS research program.
6. Designed and developed a Holter system (EKG and Blood Pressure Monitor) with Advanced Medical products (now Advanced Biosensor). The system records EKG and blood pressure for 24 hours and also performs data analysis. My system was the first in the world to offer internet capabilities, such as data transmission via email and FTP. The system was considered best-in class worldwide, and it is still used by cardiologists in the USA, Europe, Asia and Latin America.
7. Wireless Home-Based Monitoring of Cardiac Patients, South Carolina Consortium for Cardiovascular Diseases and Stroke.
8. Spatial-Temporal Predictive Model for Ambient Ozone and Particulate Matter, Environmental Protection Agency.
9. Designed and developed APIs for Bayesian network inference and Bayesian network learning. The APIs and related libraries are being used worldwide by academia in data mining courses.

RESEARCH SUPERVISION

Doctoral Students.

1. Anton Bezuglov, "Globally Optimal Algorithms for Training Hidden Markov Models and Sufficient Dimensionality Estimation," Expected graduation date, November 2006. (I was the dissertation director)
2. Valerie Sessions, October 2006
3. Miguel A. Barrientos, a Fulbright Fellow. "Dynamical Analysis of Temporal Processes Using Bayesian Belief Networks," 1999. (I was the dissertation director)
4. Kuha, Ph. D., "JOE: Java Ontology Editor," Computer Engineering, May 1998.
5. Mark, Blomeke, Ph.D., "Agent Encapsulated Bayesian Networks," Computer Science, May 1998.

6. Chang Jin Kee, "Building a Distributed Architecture for a Case-Based Tutoring System," July 1995. (I was the dissertation director)
7. Enrique C. Pelaez, (PhD, Electrical & Computer Engineering), "A Fuzzy Expert System for Performing Failure Modes Effects and Criticality Analysis," December 1994.
8. Venki Swaminathan, (PhD, Electrical & Computer Engineering), " Concurrent Program Execution," May 1994.
9. Yalin Hu (Ph.D., Electrical & Computer Engineering), "Real-Time Neural Computing" , December 1993.
10. K. Ma, (PhD, Electrical & Computer Engineering), "Statistical Neural Network Models: Theory and Implementation for Visual Pattern Recognition," 1991.
11. J. Chen, (PhD, Electrical & Computer Engineering), "An Intelligent Control Architecture for Expert Process Control," 1992.
12. M. L. Dowell, (PhD, Electrical & Computer Engineering).
13. Angel Puerta, (PhD, Electrical & Computer Engineering), "L-CID: A Blackboard Framework to Experiment with Self-adaptation in Intelligent Interfaces," 1990. Angel worked with Terry Winograd at Stanford and funded a company called RedWhale based in Palo Alto, CA.
14. Kai-Tsong Wang, (PhD, Electrical & Computer Engineering), "Shape Recognition and Representation with Depth Information," 1990.
15. Touru Ozeki, (PhD, Electrical & Computer Engineering), "Incremental Placement and Routing for VLSI Macrocells," December 1988.

Masters Students

1. R. Natu, (MS, Electrical & Computer Engineering), "LSIM: A Parallel Computing Environment for Large-Scale Numerical Computations," 1990.
2. Riyaz Pishori, (MS, Electrical & Computer Engineering), "Expert System Scheduling," February 1991. After graduation, Mr. Pishori took a position with Microsoft, in Seattle WA.
3. Savita Raj, (MS, Electrical & Computer Engineering), "A Comparative Study of Methods for Maintenance of Knowledge-Based Systems," 1991. After graduation, Mrs. Raj took a position with Inference Co., in Chicago IL.
4. Vinod Marur, (MS, Electrical & Computer Engineering), "Design of an Object-Oriented, Real-Time Data acquisition System," January 1994. After graduation, Mr. Marur took a position with Bristol Technology, in Bristol, CT. While working for D.E. Shaw, Mr. Marur founded www.juno.com, which became the third largest IP provider in the world. Vinod joined Google in 2004 and is currently Director of the Ads Group.
5. Shah, (MS, Electrical & Computer Engineering), "Design of a Bayesian Retriever for Case Based Reasoning," January 1995. After graduation, Mr. Shah took a position with Bristol Technology, in Bristol, CT.
6. Vadlamani, (MS, Electrical & Computer Engineering), "Design of an Object-Oriented Shell for Building Bayesian Belief Systems," May 1998.
7. Gandikota. (MS, Electrical & Computer Engineering), "Design of an Object-Oriented Graphical User Interface for a Bayesian Belief Shell," May 1996.
8. K. Gunaseelan: (MS, Electrical & Computer Engineering), Design and Implementation of an Object-oriented, Windows-based Interface for Integrating Databases with Bayesian Belief Networks," May 1996.
9. Bica: (MS, Electrical & Computer Engineering) "Predicting the Outcome of Traumatic Head Injuries Using Bayesian Methods," April 1997.
10. M. J. Thatipamala: (MS, Electrical & Computer Engineering) "Design and Development of Windows-Based 3D Architectural Drawing Software Using Microsoft Foundation Classes (MFC) and OpenGL With Support to AutoCAD Files in the Form of a Dynamic Linked- Library (DLL)", October 1997.
11. M. Salas Zuniga: (MS Computer Science, Instituto Tecnológico de Monterrey, Mexico) "Modelado Geométrico y Localización de Marcas Antropométricas en un Cráneo Humano", August 1998.
12. Kiran Tvarlapati : (MS Computer Science & Engineering) "A Probabilistic Approach to Multi-Sensor data fusion for Target Tracking in an Uncertain Domain." December 2002.
13. Emilio Mangué : (MS Computer Science & Engineering) "Design of a Bayesian Inference Kernel using the C# Programming Language. " December 2002
14. Jonathan Wu : (MS Computer Science & Engineering)"A New Protocol for Distributed Secure Voting System." May 2003
15. Marc Lockhart : (MS Computer Science & Engineering) "Design of a Web-Based Interface for a Bayesian Inference Engine. " Sumer 2003

16. Nagabushan Mahadevan : (MS Computer Science & Engineering) "BNLSQL: A Bayesian Network Learning Algorithm in SQL." November 2003. Nag is a research scientist at ISIS, Vanderbilt University.
17. George Miller, (MS, Electrical & Computer Engineering), "Enhanced Feedback Model for Machine Learning Systems," 1989.
18. Donald L. Mitchell, (MS, Electrical & Computer Engineering), "Means-Ends Analysis, a Hardware Implementation", 1989.
19. M. Taker, (MS, Electrical & Computer Engineering), "A High-Level Interface for a Mobile Robot," 1990.
20. P. Rangaswami, (MS, Electrical & Computer Engineering), "Automated Management of Computer Integrated Manufacturing (CIM) Networks," 1990.
21. H. Desai, (MS, Electrical & Computer Engineering), "Simulation and Performance Analysis of Reliable Broadcast Protocols for Distributed Systems," 1991.
22. S. V. Upadaya, (MS, Electrical & Computer Engineering), "Network Management and Performance Monitoring," 1991.
23. Arun Narasimhaswamy, (MS, Electrical & Computer Engineering), "Declarative Representation of Distributed AI Systems," 1991.
24. J. M. Rhodes, (MS, Electrical & Computer Engineering), "Intelligent Tutoring & Lab Assistance using a Hypertext Shell," 1991.
25. M. Yon, (MS, Electrical & Computer Engineering), "WAGEN: A VLSI Generation Tool for Weinberger Arrays," 1991.
26. H. Tatman, (MS, Electrical & Computer Engineering), "Real-Time Neural Networks for Speech Recognition," 1992.
27. M. Sigh (MS, Computer Science), "Construction of Bayesian Network Structures from Data," 1993.
28. K. V. Ananthakrishnan, (MS, Electrical & Computer Engineering), "A Concurrent Information Processing Coordinator Package," May 12, 1993.
29. Ming Tan, (MS, Electrical & Computer Engineering), "Path Planning for a Mobile Robot," May 1994.
30. S. Joshi, (MS, Electrical & Computer Engineering), "A General Purpose Statistical Neuro-computing System," Sept. 1994.
31. S. Palakodety, (MS, Electrical and Computer Engineering), "A Special Purpose Concurrent Information Processing System Tool," November 1994.
32. Young-Gyun Kim, (MS, Computer Science), "Design and Construction of a New Straw Model in Bayesian Networks," Nov. 1994.
33. K. Naik (MS, Computer Engineering), "A Concurrent Information Processing Parallel Design Analysis," December 1995.
34. Leszek Piatkiewicz (MS, Computer Science), "On the Construction of a Bayesian Network for Agricultural Loan Assessment," May 1996.
35. Pat Mills (MS, Computer Engineering), "A Fuzzy Voice Recognition System," December 1995.
36. Juan Martinez: (MS, Computer Engineering), "A Fuzzy Control System for a Robot Arm," October 1996.
37. J. Argawal (MS Computer Engineering) "Fuzzy Control Methods," November 1997.
38. Hong Wei, May 12, 2003
39. Jincao Ye (MS Computer Science) "SQL Implementation of Junction Tree Method for Probability Update in Bayesian Networks," May 2003.
40. Hrishikesh Goradia: (MS Computer Science) "Building Blocks for Agent Design." November 2003

Undergraduate Student Supervision.

1. Jeff Javrin: "Porting Kyoto Common Lisp to the UNIX Environment," Spring 1990.
2. Richard Wrigley: "Purvis, a Weather Prediction Expert System," Fall 1992.
3. Nathalie Acacio: "Building a Bayesian Network in the 'C' Language," Spring 1993.
4. Geoff Gray: "Implementing On-Line Help for 'C' Programming in Windows," Spring 1993.
5. Oscar Pita: "Building a Windows-based Interface for Constructing Bayesian Networks," Spring 1993.
6. Michael Jacobs: Spring 2001: "Student Ambassador for Microsoft"
7. Aseem Sod: Summer 2002: "Add multi-target capabilities to the SC Tracker". Aseem is a Product Manager at Google.
8. Kevin Walker: Summer 2003: "Implement the SC Tracking architecture on Berkeley MOTES sensors"
9. Nathan Johnson: Summer 2003: "Implement the SC Tracking architecture on Berkeley MOTES sensors"
10. Gertrude Johnson: Fall 2003: "Implement dynamic polynomial evaluators for hand held devices," SCAMP Program
11. Stephen Brown: Fall 2003: "Student Ambassador for Microsoft"

12. Jon Bell, Mat Bell, Jeremy Vanderknyff. I acted as mentor of these students for a national programming competition, sanctioned by IEEE and the ACM. The team advanced to the "Final Four" finals. The competition took place in Redmond, WA, in March 2004.
13. Nathan Johnson, Kevin Walker, Achraj El-Allil, Conor LeeHaug. I acted as mentor of these students for a national programming competition, sanctioned by IEEE and the ACM. They advanced to the "sweet 16" but did not make it to the finals. The competition took place in Redmond, WA, in March 2004..
14. Nathan Johnson, Kevin Walker. "Adapting the SC Tracker to operate with the Berkeley Motes." The research experience consisted in adapting the concepts developed for the SC Tracker, part of the DARPA-ANTS infrastructure, to operate under the Berkeley Motes Sensor platform. Summer 2003.
15. Faculty mentor of Jon Bell, Mat Bell, and Jeremy Vanderknyff, the three students were recipients of McNair Scholarships, Fall 2003-Spring 2004.

Advised the following students in Selected Topics courses:

1. T. Hock Tan, EECE 897, "Selected Topic: Porting a Large-Scale AI System," Fall 1988.
2. Denny R. Williford, EECE 897, "Selected Topic: Parallel Programming," Summer 1989.
3. R. Natu, EECE 897, "Selected Topic: Parallel Programming," Summer 1989.
4. Arun Narasimhaswamy, EECE 897, "Selected Topic: Readings in Distributed Artificial Intelligence," Fall 1990.
5. R. Pishori, EECE 897: "Selected Topic: Expert Systems Scheduling," Fall 1990.
6. R. Natu, EECE 897: "Selected Topic: Expert Systems Scheduling," Fall 1990.
7. H.. F. Li, EECE 897, "Selected Topic: A study of Fractal Properties of the Lung," Fall 1991.
8. J. Kee, EECE 897, "Selected Topic: Development of a Distributed Architecture for Intelligent Tutoring," Summer 1993.
9. G. Gage, EECE 897 Selected Topics: "Migrating from a Computer Network from Netware to Windows/NT," Summer 1996
10. Sanjay, EECE 897 Selected Topics: "Migrating from a Computer Network from Netware to Windows/NT," Summer 1996
11. W. Dixon, EECE 897 Selected Topics, "Selected Readings on Bayesian Belief Networks," Fall 1996.
12. P. McCarty, EECE 897, Selected Topics, "Selected Readings on Bayesian Belief Networks," Fall 1996.
13. P. McCarty, Selected Topics, "Building Bayesian Networks as Binary Components," Spring 1998.
14. Xu Biang, Selected Topics, "Building Bayesian Networks as Binary Components," Spring 1998.
15. James Boswell, Selected Topics, "Building Bayesian Networks as Binary Components," Spring 1998.
16. Kiran Tvarlapati, Nag Mahadevan, Glen Soares: Building a library for Bayesian Inference, Spring 2000.
17. Natalia Pakhomkina, "Data Mining on the Teradata System," Spring 2000
18. Aseem Sod, Summer 2002: "Adding Multi-Tasking capabilities to the South Carolina Tracker," Sponsored by DARPA
19. Anton Bezuglov, Using Dynamic Bayesian nets to predict weather conditions, Fall 2003
20. Kevin Walker, Nathan Johnson, Summer 2003 "Adapting the South Carolina Tracker to Operate under MOTES Sensors," Funded by DARPA.
21. Kevin Walker, Nathan Johnson, Connor LeeHaug, Achraj El-Alil, Spring 2004: "Design of a Vital Signs Monitor for a PDA Platform," Partially funded by Microsoft Co.
22. Jon Bell, Matt Bell, Jeremy Vanderknyff, Spring 2004: "Design of a Location Aware Assistant for Healthcare Providers" Partially funded by Microsoft Co.

SCHOLARLY AND PROFESSIONAL PUBLICATIONS

BOOK CHAPTERS

1. "Using Bayesian Networks for Case Instantiation and Case Retrieval in Case-Based Reasoners." invited chapter, Knowledge-Based Systems: Advanced Concepts, Tools and Applications, Ed. by Spiro Tzafestas, Kluwer World Scientific Publishing Co., 1997.
2. Bayesian Target Tracking, in "Distributed Sensor Networks: A Multi-agent Perspective," Edited by Victor Lesser, Charles L. Ortiz Jr. and Milind Tambe, Kluwer Academic Press, May 2003.
3. "Assessing the most probable facial features from skull data and facial landmarks," Computer-graphic Facial Reconstruction, Ed. by Murray Marks, Academic Press, to appear, 2005.
4. "Embedding Bayesian Networks in Sensor Grids," Encyclopedia of Data Warehousing and Mining, First Edition, Edited by John Wag, Published by Idea Group Reference, July 2005.

REFEREED PUBLICATIONS (Journals and Conference Proceedings)

1. O. Diez-Martinez, J. A. Roig, J. E. Vargas, J. Sepulveda, H. Brust-Carmona: "Neural pathway mediating somatic evoked responses in the caudate nucleus of cats." *Physiology and Behavior*, Vol. 19, pp. 269-276, 1977.
2. Fuentes-Pardo, J. E. Vargas: "El empleo de las matemáticas en el estudio de los ritmos biológicos." *Bol. Estud. Med. Biol., Mex.* 30:217-224, 1979.
3. R. Rodriguez, M. Lujan, J. E. Vargas: "Circannual variation in sensitivity of the isolated guinea pig ileum to Naloxone." *Journal of Pharmacy and Pharmacology*, 32:363-365, 1980.
4. Gasteiger E. L., Roig J. A., Zarco-Coronado I., Estrada Y., Vargas J. E., and Brust-Carmona H.: "Caudate unit activity and somal diameters in intact and nigral lesioned cats." *Brain Research Bull.*, Vol. 12, pp. 43-50, 1984.
5. Prado-Alcala, R.A., Cepeda, G., Verduzco, L., Jimenez, A. & Vargas, J.E. "Effects of cholinergic stimulation of the caudate nucleus on passive avoidance." *Neurosci. Lett.*, 51:31-36, 1984.
6. J. R. Bourne, J. Cantwell, K. Kawamura, C. Kinser, X. Li, L. DeBrock, J. Jiang, J. Vargas, N. Miyasaka: "Intelligent CAI in Engineering: Knowledge Representation Strategies to Facilitate Model-Based Reasoning." *International Journal of Intelligent Systems*, Special Issue, 1987.
7. X. Li, J. Vargas, J. Cantwell, J. Bourne, K. Kawamura, N. Miyasaka: "Qualitative Simulation of a Power Distribution System." *Proc. of the IEEE-SMC*, Oct. 1987.
8. J. E. Vargas, J. R. Bourne, C. Dunkleberger: "Similarity-based reasoning as a Paradigm for Artificial Intelligence." *Proceedings of the IEEE-BME*, Nov. 1987.
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42. J. E. Vargas, Nathan Johnson, Kevin Walker, "Embedding Bayesian Reasoners in Sensor Networks," 25th International Real-Time Systems Symposium, December 2004.
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NOTES

Paper #27 was chosen as one of the top ten papers of the WCS94 by the British Newsletter "AI Watch," Vol. 3., No. 1, January 1994. The conference had papers from 47 countries.

Paper #44 was selected as the best paper of the conference.

INVITED CONTRIBUTIONS IN PROFESSIONAL CONFERENCES

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6. Vargas J. E., M. A. Barrientos, A. Jiménez, F. Sanchez: "Paquete interactivo de análisis estadístico enfocado a las ciencias biomédicas desarrollado en una computadora PDP-11/40 I." XXII Cong. Nac. de Ciencias Fisiol., Aguascalientes, Ags., Mex., 1979.
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20. J. E. McNamee, H. Li, & J. E. Vargas: "Flow Heterogeneity and Skew in Symmetrical Models of the Pulmonary Vascular Network." Annual Conf. of the Microcirculatory Soc. of America, April 1992.
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22. J. E. Vargas, D. Willifor: "Design of a Bayesian Belief Network for the Hypercube parallel supercomputer." 5th Conf. on Hypercube Concurrent Computers and Applications, Nov. 1989.
23. J. E. Vargas: "Parallel Propagation of Belief in Bayesian Networks." 6th Annual USC-CS Symposium on Intelligent Systems, Columbia SC, March 23, 1990. (INVITED CONTRIBUTION).
24. J. E. Vargas: "An Assessment of Artificial Intelligence Tools for Scheduling." General Electric AI Forum, Louisville, KY, Summer 1990. (INVITED CONTRIBUTION).

SEMINARS, COLLOQUIA, and KEYNOTE CONFERENCES (Not a complete list)

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2. The Impact of Computer Technology on Chemistry Research. School of Chemistry, University of Chihuahua, Mex., May 1980.
3. Determining Periodicity in Biological Data Using Recent Computer Methods, Inst. Tecnológico de Chihuahua, Chih., Mex., November 1981.
4. The Fast Fourier Transform and its Application to the Analysis of Electroencephalograms, Soc. Mex. de Electroencefalografía y Neurofisiología Clínica, Mex., May 1983.
5. The Computer as an Instrument for Administrative Processes, National Symposium on Administrative Computing, National University of Mexico, Mex., 22-24 Feb., 1984.
6. The application of Microcomputers to Medicine and Psychology (in Spanish), IEEE, Section Mexico, Mexico City, 26, 27, 28 of June, 1984..
7. Strategies for Diagnosis, Seminar presented to the Maintainability Group of NCR, Columbia, SC. September 1989.
8. Introduction to Artificial Intelligence, San Jose, Costa Rica. Seminar organized by the Government of Costa Rica, with funding provided in part by the Organization of American States, and the Development Agency of the U. S. State Department. November 1989.
9. Expert Systems, an Introduction, School of Nursing, USC, Columbia, SC, November 1989.
10. Object-Oriented Methods, Monsanto Chemical, Greenville, SC, March 1990.
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12. Introduction to Artificial Intelligence, Offered to the Management Information System Group, General Electric Appliances, Louisville, KY, July 1990.
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14. Introduction to Artificial Intelligence, San Jose, Costa Rica. Seminar organized by the Government of Costa Rica, with funding provided in part by the Organization of American States, and the Development Agency of the U. S. State Department, August 1991.
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16. Case-Based Reasoning: Applications to Tutoring Systems and Scheduling, Electrical Engineering, University of Texas at San Antonio, May 1992.
17. Object Oriented Engineering, Keynote Conference, School of Engineering, Univ. Autonoma Metropolitana, Mexico, Sept. 1992.

18. Introduction to Case-Based Reasoning, Key-Note Conference, School of Psychology, Univ. Nacional Autonoma de Mexico, Mex., Sept. 1992.
19. Building Maintainable Scheduling Systems using a Case-Based Reasoning Approach, Computer Science Dept., University of South Carolina, Columbia, SC, Oct. 15, 1992.
20. Recent Methods for Dealing with Uncertainty in Medical Expert Systems, Medical University of South Carolina, Charleston, SC, January 14, 1993.
21. Recent Methods for Dealing with Uncertainty in Medical Expert Systems, School of Medicine, University of South Carolina, Columbia, SC, April 5, 1993.
22. Statistically-Based Knowledge Systems for Process Control. IEEE Chapter of Columbia, SC. April 4, 1994.
23. Using Bayesian Networks for Process Control Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM) Campus Monterrey México, July 1995.
24. Introduction to Artificial Intelligence, University of Chihuahua, Chihuahua, Mex, August 1995
25. Using Bayesian Networks for Process Control, University of Chihuahua, Chihuahua, Mex., August 1995.
26. Using Bayesian Networks for Process Control, Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM) Campus Cuernavaca, Mexico, August 1995.
27. Using Bayesian Networks for Facial Recognition, Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM) Campus Cuernavaca, Mexico, December 1995.
28. Predicting Air Quality with Bayesian Networks, Departamento del Distrito Federal, (In Spanish, Mexico City), December 1995.
29. Using Bayesian Networks for Process Control Invited Conference Universidad Autónoma Metropolitana, Mexico, DF, March 1997.
30. "Wireless Transmission of Medical Data," Invited Conference, Universidad Autónoma Metropolitana, Mexico, DF, March 1997.
31. "Using Bayesian Networks for Process Quality Assurance," National Institute for Research in Physics, Electronics, and Chemistry, Warsaw, Poland, Summer 1997.
32. "Knowledge Discovery and Data Mining for Medical Decision Making," South Carolina Research Authority (SCRA), Charleston, SC, November 1997.
33. "Data Mining For HealthCare," 1998 Meeting of the Healthcare Information Infrastructure Technology (HIIT), Advanced Technology Program (ATP), of the Dept. of Commerce, Charleston, SC September 1998.
34. "Using Bayesian Networks for Data Mining and Knowledge Discovery" , Keynote Conference, International Conference on Computation, CIC'2001, Nov. 2001, Mexico City.
35. "Data Mining and Knowledge Discovery", Keynote Conference, Instituto Tecnológico de Cd. Valles, May 2003, Mexico.
36. Bayesian Inference in Distributed Sensor Architectures, Invited Conference College of Engineering, Vanderbilt University, November 2004.
37. Academic Relations Programs and Research Opportunities with Microsoft, Invited Conference, College of Engineering, Saint Louis University, September 2004.
38. Academic Relations Programs and Research Opportunities with Microsoft, Invited Conference, College of Engineering, University of Tennessee – Chattanooga, September 2004.
39. Academic Relations Programs and Research Opportunities with Microsoft, Invited Conference, College of Engineering, Vanderbilt University, September 2004.
40. Academic Relations Programs and Research Opportunities with Microsoft, Invited Conference, Dept. of Computer Science, University of Tennessee, Knoxville, November 2004.
41. Academic Relations Programs and Research Opportunities with Microsoft, Invited Conference, ACM Chapter of the Dept. of Computer Science, Middle Tennessee State University, November 2004.
42. An Overview of Current Trends on Embedded Systems, Invited Conference National Polish Institute of Nuclear Chemistry and Technology, Warsaw, Poland, December 2004.
43. Academic Relations Programs and Research Opportunities with Microsoft, Invited Conference, Dept. of Computer Science, University of Missouri, February 2004.
44. New tools for Data Mining, Invited Conference, IEEE Chapter of the University of Tennessee, Chattanooga, February 2005.
45. New Trends in Data Mining, Invited Conference, University of Salamanca, Salamanca, Spain, June 2005.
46. Data Mining Features in SQL Server 2005, Invited Conference, University of Salamanca, Salamanca, Spain, June 2005.

47. New Trends in Data Mining, Invited Conference, Emory University, Atlanta, GA, October 2005.
48. Data Mining Features in SQL Server 2005, Invited Conference, Emory University, Atlanta, GA, October 2005.
49. New Trends in Data Mining, Invited Conference, University of North Carolina, Charlotte, November 2005.
50. An Overview of Current Trends on Embedded Systems, Invited Conference Electrical Engineering, University of South Carolina, December 2005.
51. Data Mining Features in SQL Server 2005, Invited Conference, University of North Carolina, Charlotte, January 2006.
52. Keynote speaker, ACM-SE Conference, Melbourne FL, Feb 2006.
53. Keynote speaker, Awards Ceremony, Computer Science Department, University of Missouri-Rolla, May 2006.
54. Microsoft Academic Programs, Morehouse College, September 2006.
55. Microsoft Academic Programs, Emory University, September 2006.
56. Microsoft Academic Programs, NCSU, September 2006.
57. Microsoft Academic Programs, UNC Chapel Hill, September 2006.
58. New Trends in Data Mining, Duke University, September 2006.
59. Keynote speaker, InfoSEC Conference, Kennesaw State University, September 23, 2006.
60. New Trends in Data Mining, Georgia State University, Oct 17, 2006.
61. Keynote conference, "Magnum Conference in Computing" CIC-IPN, Mexico City, Nov 2006.
62. Keynote conference, "Connecting Dots in a Flat World", University of Texas at El Paso, TX, March 2008.
63. Keynote conference, TechBA (Technology Business Accelerator), San Jose Tech Museum of Innovation, May 28, 2008.
64. Keynote conference, CAHSI (Computing Alliance of Hispanic Serving Institutions), June 2008.
65. Keynote Conference, "My favorite Data Mining Algorithms", University of Texas at El Paso, September 2008.
66. Keynote Conference, CAHSI (Computing Alliance of Hispanic Serving Institutions), June 2009.
67. Keynote conference, "Cloud Computing," EPSI Federation, Santa Fe, NM, July 2011.
68. "Innovation and Cloud Computing", NASA Goddard Space Center, November 16, 2011.
69. "Innovation in Technology and Computing," Georgia Southern University, Feb 2013
70. "Innovation in Technology and Computing," ITESM, Monterrey Mexico, July 2014

RESEARCH ACTIVITY (Funding)

1. Strategies for Coupling Symbolic Processing with Neural Networks: SPAR Research and Productivity, Oct. 1988. Amount requested: \$3,000.00.
2. Data-Directed Distributed Processing: Carolina Venture Fund, Submitted with Dr. Ben Beker. January 15, 1989. Amount requested: \$10,043.00.
3. Strategies for coupling neural networks and symbolic processing: Research and Productive Scholarship, Sponsored Research, University of South Carolina, February 1989. Amount funded: \$900.00.
4. A Study of Clustering Methods for Bayesian Networks on Hypercube Architectures: Proposal submitted to the NSF Research Initiation Award Program. January 15, 1990. Amount Requested: \$60,000.00.
5. Material Resource Planning: General Electric Appliances, Louisville, KY. Summer 1990. Amount funded: \$14,974.00.
6. Expert System Scheduling: General Electric Appliances, Louisville, KY. Sept. 1990 to Dec. 1991. Amount funded: \$89,100.00.
7. Development of a Computer Network for Quality Assurance and Statistical Process Control, General Electric Medical Systems, January-December 1992. Amount funded: \$88,000.00.
8. Do 60-Hertz Magnetic Fields Influence Macrophage Functions and Malignancy?, submitted to E.P.R.I., on January, 30, 1992, with T. Sudarshan, C. Brice, B. Beker, A. Gaffar, W. Bowers and G. Mayer. Amount requested: \$1,002,016.00.
9. Airway Particle Deposition and Bronchogenic Carcinoma, submitted to the South Carolina Cancer Center, with Dr. James McNamee, USC School of Medicine, November 1992. Amount requested: \$9,620.
10. Building a Case-Based Reasoning Tutoring Architecture for High School Students with Learning Disabilities. NEC Foundation. May 25, 1992. Amount Requested: \$23,298.00.
10. Building a Distributed Case-Based Reasoning Tutoring Architecture for Disabled Children. Dr. Scholl Foundation, May 25, 1992, Amount Requested: \$25,298.60.

11. Development of a Computer Network for Quality Assurance and Statistical Process Control, Phase II. General Electric Medical Systems, February 1993 - February 1994. Amount funded \$106,110.00.
12. A Knowledge-based System for the Prediction of Overnight Low Temperatures, Carolina Venture Fund and South Carolina Water Resource Commission. Jointly funded with the SC Water Resources Commission. Amount funded \$9,155.68.
13. Bayesian Belief Networks and Airway Cancer from Cigarette Smoke, (with Dr. James McNamee, USC School of Medicine), Carolina Venture Fund. Amount Requested: \$8,126.00.
14. Statistically-Sound Methods for Knowledge Representation and Probabilistic Inference. National Science Foundation, February 15, 1993. Amount funded: \$17,057.00
15. Neural Models and Classical Conditioning: Limbic Extra pyramidal Interactions, (with Dr. Don Powell, USC Dept. of Psychology), submitted to NSF on May 21, 1993. Amount requested: \$344,053.
16. Optimization of Crystallization Conditions for Biological Macromolecules Using Artificial Intelligence Methods, (with Dr. L. Lebioda, USC Dept. of Chemistry), NASA - EPSCoR. Amount requested: \$355,740.
17. Development of a Computer Network for Quality Assurance and Statistical Process Control, Phase III. General Electric Medical Systems, February - May 1994. Amount funded \$17,000.00.
18. Development of a Computer Network for Quality Assurance and Statistical Process Control, Phase IV. General Electric Medical Systems, August - December 1994. Amount funded \$26,000.00.
19. Development of a Statistically-Based Knowledge System for Diagnosing and Predicting Tests Failures of Superconducting Magnets. General Electric Medical Systems, Amount requested \$66,000.00.
20. Building a Case-Based Reasoner for Advise of Crystallization Conditions from Bayesian Representations of a-priori Experiments (with Dr. L. Lebioda, USC Dept. of Chemistry). NASA Microgravity Science & Space Administration, June 1994, Amount Requested: \$342,138.
21. Synergizing Case-Based Reasoning with Bayesian Models NSF North-American Research Fellows Program, November 1994, Amount funded: \$33,387.00.
22. Case-Based Reasoning from Bayesian Models of Cancer Diagnosis. South Carolina Center for Cancer Treatment and Research, November 1994, Amount Requested: \$23,000.00
23. Using Bayesian Belief Networks and Case-Based Reasoning for the Diagnosis of Carcinomas, Whitaker Foundation, February, 1994. Amount Requested: \$189,001.
24. Migrating to Windows/NT Server, South Carolina Dept. of Licensing Labor and Registration, Summer of 1996, Amount funded: \$ 17,000.
25. Wireless Home-Based Monitoring of Cardiac Patients, South Carolina Consortium for Cardiovascular Diseases and Stroke, Amount requested: \$20,581.
26. Spatial-Temporal Predictive Model for Ambient Ozone and Particulate Matter, submitted to the Environmental Protection Agency. Amount requested: \$ 502,723.
27. Data Mining for Healthcare, HIIT, ATP, SCRA, May 1998-February 1999, funded for \$60,000.
28. Data Mining for Healthcare, HIIT, ATP, SCRA, May 1999-August 1999, funded for \$60,000.
29. Resource Allocation Under Uncertain Domains (with Dr. Mike Huhns, Marco Valtorta, Jose Vidal) DARPA/ANTS program. September 1999-May 2002, funded for \$749,000.00.
30. Personal Electronic Devices for Law Enforcement, SPAWAR Systems Center, Charleston, SC, \$299,998.00 proposal submitted with Advanced Technology Institute (ATI) of the South Carolina Research Authority (SCRA), September 1999-May 2000. Not funded.
31. Data Mining and Warehousing Infrastructure. Proposal submitted to the Wal-Mart / NCR University Program. (With Dr. Mike Huhns). Awarded \$7.6 Million.
32. Data Mining and Knowledge Discovery: NCR. September – December 2000. Funded for \$35,000.
33. Cost and Effectiveness of the AH64/UH60-L On Board Vibration Monitoring System, in Collaboration with Victor Giurgiutsiu, Mechanical Engineering, USC. Funded by the SC National Guard, 1999-2002. Total funding \$360,000.
34. Normative Decision Analysis Research Incentive Proposal (with John Rose and Marco Valtorta). January – December 2002. Funded for \$50,000
35. Target Tracking in Uncertain Environments. DARPA/ANTS Program, August 2001-December 2002, funded for \$145,000.00
36. Porting the SC Tracker to The Berkeley Wireless Sensor Architecture, DARPA/ANTS Program, January-June 2003, funded for \$50,000.
37. Intelligent Decision Support System for Jidoka Modules (With Dr. Mike Huhns) U.S. Army Tank and Automobile Command, December 2003, amount funded \$640,000.

38. Embedding Bayesian Reasoners for Dynamic and Uncertain Domains, (with Dr. Marco Valtorta and Dr. Csilla Farkas) DARPA/IPTO Office, amount requested \$925,000, September 2003, not funded.
39. Embeddable/implantable integrated active sensors for structural, biomedical, and chemical applications with local processing/decision and wireless power/communication, in Collaboration with Dr. Victor Giurgiutsiu, Mechanical Engineering, USC, Submitted to the NSF, February 2004, Amount Requested, \$500,000. Not funded.

TEACHING ACTIVITIES

COURSE DEVELOPMENT AT USC

- EECE 517** Windows Programming: Provide students with an understanding of the fundamental design of the Windows family of operating systems. Teach students to develop computer programs under Windows, with an emphasis on the correct use of the features and facilities offered by Windows, including the manipulation of system objects through APIs. The course evolved into a new course, called CSCE 547.
- EECE 547** Windows Programming: Provide students with an understanding of design issues related to GUIs and how they relate to graphically interactive operating systems. Teach students to develop computer applications under such systems, with an emphasis on the correct application of object-oriented methods. Focus on case studies and applications to engineering. Emphasis on teaching the tools related to the .NET architecture, which is similar to the J2EE platform.
- EECE 812** Object-Oriented Methods: Course introduces students to object-oriented programming (OOP) methods and languages. Emphasis on the proper use of the object-oriented programming paradigm, including encapsulation, inheritance, object classification, specialization, and message passing. Discussion of case studies and applications to engineering.
- EECE 813** Distributed Component Software: Introduce students to the concept of distributed component software. Students participate in the development of distributed systems using COM, DCOM and COM+. Discussion of case studies and applications to engineering and other areas, such as healthcare.
- EECE 890b** Knowledge Discovery and Bayesian Networks: This course covers advanced methods for data mining and knowledge discovery, based on Bayesian (probabilistic) networks.
- CSCE 822** Data Mining and Knowledge Discovery: Course covers advanced data mining, distributed systems, large-scale data warehousing.

COURSES TAUGHT AT USC

EECE 555 Machine Intelligence
 EECE 897 Directed Individual Study
 EECE 897 Directed Individual Study
 EECE 502 Operating Systems
 EECE 890 Selected Topics: Knowledge Based Systems
 EECE 499 Senior Special Problems
 EECE 555 Machine Intelligence (Artificial Intelligence)
 EECE 897 Directed Individual Study
 EECE 222 Electric Circuits II
 EECE 499 Senior Special Problems
 EECE 821 Knowledge Based Systems
 EECE 222 Electric Circuits II
 EECE 897 Directed Individual Study: Scheduling Systems
 EECE 890 Selected Topics: Advanced AI Programming
 EECE 890 Selected Topics: Reasoning Modalities in AI
 EECE 890 Selected Topics: Reasoning under Uncertainty
 EECE 499 Senior Special Problems
 EECE 890 Object Oriented Programming
 EECE 502 Operating Systems
 EECE 352 Algorithms & Data Structures

EECE 890b Knowledge Discovery in Databases
EECE 517 Windows Programming
Special Topics: Bayesian Networks
EECE 890 Special Topics: Programming in Windows
EECE 890 Special Topics: Distributed Components in COM/DCOM
EECE 890 Special Topics: Object Oriented Methods and Distributed Components
EECE 890b Special Topics: Bayesian Networks and Knowledge Discovery
CSCE 822 Data Mining and Warehousing
CSCE 822 Data Mining
CSCE 745: Hidden Markov Models
CSCE547 Windows Programming
CSCE 145 Introductory Programming

COURSE DEVELOPMENT AT Georgia Southern University

I developed and/or created courses on Algorithms and Data Structures, Artificial Intelligence, Data Science, Advanced Sensors, and Computer Architecture. I also offered courses on Introduction to Computer programming, and Created a Special Topics course in which we used the Go Programming Language to implement the Algorithms from the book "Introduction to Algorithms" by T. Comer, C.E. Leiserson, R. Rivest and C. Stein.