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Assistant Dean of Science and Engineering and Chair of Civil Engineering

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EDUCATION

AS (Cum Laude) 1980 Civil Engineering Technology, University of Lowell, Lowell MA
BS (Cum Laude) 1982, MS 1984, PhD 1988 Civil Engineering, University of Massachusetts, Amherst

RESEARCH INTERESTS:

Systems and systems evaluation, expert systems and geographic information systems applications, traffic operations and safety, asphalt pavements and highway design.

EXPERIENCE

Commonwealth of Massachusetts, Department of Public Works, Engineering Aid, 1972-1981. Junior Civil Engineer, 1981-1985. Senior Civil Engineer, 1985-1986.
Champagne Associates, Northampton, MA, Highway Design Consultant, 1987.
Spring Engineering, Belchertown, MA, Principal, 1987-88.
Traffic Engineering Consultant, Greensboro, NC, since 1989.
University of Massachusetts at Amherst, Civil Engineering Department, Lecturer, 1982-1987. Research Associate, 1985-1987.
North Carolina A&T State University, Civil Engineering Department, Assistant Professor, 1988-1993. Associate Professor, 1993-1998. Department Chair, Fall 1995; January to December 1997.
University of Missouri-Rolla, Civil Engineering Department, Associate Professor, 1998-2003.
University of Missouri-Rolla, Center for Infrastructure Engineering Studies, Director Transportation Institute, 1998-2003.
Merrimack College, Civil Engineering Department, Associate Professor and Chair, 2003-2006.
Merrimack College, Civil Engineering Department, Professor and Chair, 2006-2008.
Merrimack College, Division of Science and Engineering, Assistant Dean, 2003-2007.
Merrimack College, Division of Science and Engineering, Interim Dean, 2007-2008.

REGISTRATIONS

Registered Professional Engineer in Massachusetts, North Carolina and Missouri.

COURSES TAUGHT

Transportation Engineering - Junior-level, introductory course
Traffic Engineering - Senior/Graduate level
Pavement Design - Senior/Graduate level
Transportation Planning - Graduate level
Transportation Systems Analysis - Graduate level
Geometric Design of Highways - Senior/Graduate level
Surveying - Sophomore level
Fortran Programming - Freshman level
Computer Applications in Civil Engineering - Sophomore level
Introduction to Civil Engineering - Freshman level
Public Transportation Systems - Graduate level
Expert Systems in Civil Engineering - Senior/Graduate level
Emerging Technologies in Civil Engineering (includes GIS and AI topics)- Graduate level
Civil Engineering Design - Senior level, capstone design course

Infrastructure Management Engineering - Graduate level
 Introduction to Engineering – Freshman level

PUBLICATIONS

Refereed Journals

- "Analysis of High Hazard Locations: Is An Expert Systems Approach Feasible?," Spring, G. S., Collura, J., Shuldiner, P. W., Transportation Research Record, No 1111 Transportation Research Board, Washington, DC, 1987, p. 7-17.
- "An Expert System to Analyze Hazardous Intersections," Microcomputer in Civil Engineering, Vol. 3, No. 3, 1988, p. 299-309.
- "Testing, Verification and Validation of Expert Systems: A Case Study," Spring, G. S., Collura, J., Shuldiner, P. W., Watson, J., ASCE Journal of Transportation Engineering, V. 117, No. 3, May/June 1991, p.350-360.
- "Development of a Prototype Knowledge Based Expert System in the Management of Congestion on the Massachusetts Turnpike," with Gupta, A., Spring, G., S. Maslanka, V., Transportation Research Record, No 1358 Transportation Research Board, Washington, DC, 1992, 60-66.
- "Service Life and Cost of Local Highway Maintenance and Rehabilitation Treatments," with Collura J.C., Spring, G. S., Black, K., Transportation Research Record, No 1397 Transportation Research Board, Washington, DC, 1993, p. 90-95.
- "Coarse-Aggregate Effect on Mechanical Properties of Plain Concrete," with Salami, M.R., Spring, G. S., Zhao, Z., Transportation Research Record, No 1382 Transportation Research Board, Washington, DC, 1993, p. 46-51.
- "Validating Expert System Prototypes Using the Turing Test," Transportation Research, Part C: An International Journal, v 1C, No. 4, December 1993, p. 293-301.
- "Identification of Hazardous Highway Locations Using Knowledge-Based GIS," Transportation Research Record, No. 1497, Transportation Research Board, Washington, DC, 1995, p. 83-90.
- "A Critical Review of Expert System Validation in Transportation," Transportation Research Record, No. 1588, Transportation Research Board, Washington, DC, 1996, p. 104-109.
- "Evaluation Of Automated Vehicle Location Technologies for Paratransit in Small and Medium-Size Urban Areas," Journal of Public Transportation, Center for Urban Transportation Research, USF, Tampa, FL, V 1, No. 4, 1997, 43-60.
- "Operational Characteristics Of Double Left-Turn Lanes in Medium-Sized Cities," with Thomas, A., Spring, G.S., ASCE Journal of Transportation Engineering, V. 125, No. 2, March/April 1999.
- "Integration of Safety and the Highway Capacity Manual," Transportation Research Circular E-C018, Transportation Research Board, Washington, DC, July 2000, p. 63-72.
- "Toward More Effective Transportation Applications Of Computational Intelligence Paradigms," with Sadek, A., Spring, G.S., and Smith, B.L., Journal of the Transportation Research Board, issue 1836, pp 57-63, 2003.
- "Road Safety: Discussion of State of Practice," Spring, G.S., ASCE Journal of Transportation Engineering, v. 131, No. 5, May 2005, pp. 329-332.
- "Artificial Intelligence in Transportation," Transportation Research Circular E-C113, Transportation Research Board, Washington, DC, January 2007, p. 7-16.

Refereed Proceedings

- "Development of a Knowledge-Based Approach to Automatic Scheduling and Dispatching Systems Using Automated Vehicle Location and Geographic Information System Technologies for Small Urban Areas," Proceedings of the 5th International Conference on Applications of Advanced Technologies in Transportation Engineering (AATT-5), April 1998.

- "Knowledge-Based Systems Applications for Intelligent Transportation Systems," with Spring, G.S., Smith, B., Proceedings ASCE Congress on Computing in Civil Engineering, October 1998.
- "A Study of Factors Contributing to Low Retention Rates," Spring, G.S., Schonberg, W., Proceedings ASEE Annual Meeting, June 2001.
- Knowledge-based GIS for the Identification, Analysis and Correction of Hazardous Highway Locations, Spring, G.S., Proceedings of the 7th International Conference on Applications of Advanced Technologies in Transportation Engineering (AATT-7), August 2002.

Book Chapters

- "Applications of GIS in Transportation," Handbook of Transportation Engineering, McGraw-Hill, 2004.

Proceedings and Other

- Evaluation of Alternative Signalized Intersection Capacity Methods for Small Urban Areas, M.S. Thesis, 1982.
- "MicroCAD Generation of a Collision Diagram for Local Agencies," Lyman, W., Spring, G.S., Collura, J., Shuldiner, P. W., Proceedings North American Conference on Microcomputers in Transportation, Boston, 1987.
- "Expert Systems Approach For Analysis of High Hazard Locations," Spring, G. S., Collura, J., Shuldiner, P. W., Proceedings North American Conference on Microcomputers in Transportation, Boston, 1987; 14th International Forum on Traffic Records, 1988.
- ANALYSIS OF HIGH HAZARD LOCATIONS: Is An Expert Systems Approach Feasible?, Ph.D. Dissertation, 1988.
- "Testing and Validation of Expert Systems," Proceedings ASCE International Conference on Applications of Advanced Technologies in Transportation Engineering, San Diego, 1989.
- "More Effective Accident Records Systems Using Natural Language Processing," Proceedings ASCE 3rd International Conference on Microcomputer Applications in Transportation, San Francisco, 1989, p. 225 -.
- "The Use of Expert Systems for Undergraduate Curriculum Development," with Murray, K., Proceedings ASEE Annual Conference, Lincoln, Nebraska, 1989, p. 199 - .
- "Integrated Expert Systems and Graphics with Apple Technologies for the Interpretation of Aerial Photographs," Proceedings 7th National Conference on Microcomputers in Civil Engineering, University of Central Florida, Orlando, 1989.
- "More Effective Accident Records Systems Using Intelligent Retrieval Systems," Proceedings 8th National Conference on Microcomputers in Civil Engineering, University of Central Florida, Orlando, 1990, p. 504-513.
- "Validating Expert System Prototypes Using the Turing Test," abbreviated versions appear in Proceedings of the International Conference on Artificial Intelligence Applications in Transportation Engineering, San Buenaventura, CA, June 1992; and , ASCE's 4th International Conference on Microcomputer Applications in Transportation, Baltimore, MD July 1992, p. 739-749.
- "Geographic Information Systems for Traffic Inventory Management: A Case Study," Proceedings 9th National Conference on Microcomputers in Civil Engineering, University of Central Florida, Orlando, 1991. Proceedings of ASCE's Computing in Civil Engineering Conference, Dallas, TX, June 1992; Proceedings of ASCE's 4th International Conference on Microcomputer Applications in Transportation, Baltimore, MD, July 1992, p. 1-6; and, Proceedings of Institute of Transportation Engineers' 62nd Annual Meeting, Washington, DC, August 1992.
- "Implementation of Knowledge-Based GIS: A Case Study," Proceedings ASCE 1st Annual Congress on Computing in Civil Engineering, Washington, DC, June 1994, p. 1332-1338.

- "Identifying Hazardous Highway Locations Using Geographic Information Systems," Proceedings of the 10th National Conference on Microcomputers in Civil Engineering, University of Central Florida, Orlando, 1992.
- "Validating Expert Systems in Transportation Practice," Proceedings ASCE 3rd Annual Congress on Computing in Civil Engineering, Anaheim, CA, June 1996, p. 985-991.
- "A Tool for Assessing Rural Median Crossover Designs," with Spring, G.S., Virkler, M., Zhao, K., Jitta, S., proceedings TRB 2003 Annual Meeting.
- "Comparison of Control Delay Estimated by Simtraffic and CORSIM for Actuated Signals versus Observed Control Delay," with Qureshi, M., Jitta, S. R., Spring, G.S., proceedings TRB 2004 Annual Meeting.

PRESENTATIONS

More than thirty presentations at National and International Conferences.

REPORTS

- The Use of Small Computers to Assist State, Regional and Local Transportation Engineers and Planners in the Commonwealth, by Collura, J., Shuldiner, P. W., Spring, G. Phase I and Final Reports prepared for the Massachusetts Department of Public Works, September, 1986 and December, 1987, respectively.
- Testing an Expert System for Traffic Accident Analysis, by Collura, J., Spring, G., Shuldiner, P.W. Final Report prepared for the US Department of Transportation, September 1989.
- Plan for Continuation of TRB Task Force A5T54 to full Committee Status, by Mintzer, O., Spring, G., Demetsky, M., Wentworth, J. Report prepared for TRB Group 5 Executive Committee, September 1989.
- Application of KBES for Management of Post-Incident Congestion, by Collura, J., Spring, G., Gupta, A. Final Report prepared for the US Department of Transportation, September 1990.
- North Carolina A&T State University: Waste Reduction and Recycling Implementation and Program Manual, by Spring, G. Report prepared for the Chancellor, December 1990.
- Service Life and Costs of Pavement Maintenance Practices for Locally Funded Roadways in Small Cities and Towns in New England, by Collura, J., Spring, G. Final Report prepared for the US Department of Transportation, September 1991.
- Application of Geographic Information Systems to City Sign Inventories: An Evaluative Assessment for the State of North Carolina, Final Report to NC Governor's Highway Safety Program, October 1992.
- A Model Sign Inventory for Cities in North Carolina, Final Report to North Carolina Governor's Highway Safety Program, October 1993
- Identifying Hazardous Highway Locations Using Geographic Information Systems, Final Report to the US Department of Transportation, January 1994.
- Evaluation of Alternative Automated Vehicle Location Technologies Used in Automatic Scheduling and Dispatching Systems for Small Urban Areas in North Carolina, Final Report to the US Department of Transportation, February 1996.
- Application of Geographic Information Systems to Enhance Greensboro's Housing and Community Development Needs, Final Report to the US Department of Housing and Urban Development, March 1996.
- Level Of Service Assessment For Congested Freeway Sections In North Carolina, Final Report to the North Carolina Department of Transportation, June 1996.

- Development of a Knowledge-Based Approach to Automatic Scheduling and Dispatching System Using Automated Vehicle Location and Geographic Information System Technologies for a Small Urban Area In North Carolina, Final Report to the US Department of Transportation, August 1997.
- Summer Transportation Institute, Final Reports to the US Department of Transportation, August, 1999, 2000, 2001.
- Integration of Safety and the Highway Capacity Manual, Final Technical Report to the University of Missouri Research Board, November 2000.
- Identification, Analysis and Correction of Hazardous Highway Locations, Final Report to the Missouri Department of Transportation, August 2001.
- Guidelines for Shoulder Rumble Strips in Missouri, Final Report to the Missouri Department of Transportation, February 2003.

FUNDED RESEARCH (as Principal Investigator)

- Testing an Expert System for Traffic Accident Analysis, US Department of Transportation, (1988-1989)
- Application of KBES for Management of Post-Incident Congestion, US Department of Transportation, (1989-1990)
- Service Life and Costs of Pavement Maintenance Practices for Locally Funded Roadways in Small Cities and Towns in New England, US Department of Transportation, (1990-1991)
- Using Geographic Information Systems for Traffic Control Facilities Management, North Carolina Governor's Highway Safety Program, (1991-1992)
- Application of Geographic Information Systems to Enhance Greensboro's Housing & Community Development Planning, US Housing and Urban Development, (1992 - 1995)
- A Model Sign Inventory System for Cities in North Carolina, North Carolina Governor's Highway Safety Program, (1992-1993)
- Identifying Hazardous Locations Using GIS, US Department of Transportation, (1992-1993)
- Evaluation of Alternative Automated Vehicle Location Technologies Used in Automatic Scheduling and Dispatching Systems for Small Urban Areas in North Carolina, US Department of Transportation, (1994-1995)
- Level Of Service Assessment For Congested Freeway Sections in North Carolina, North Carolina Department of Transportation, (1995-1996)
- Development of a Knowledge-Based Approach to Automatic Scheduling and Dispatching System Using Automated Vehicle Location and Geographic Information System Technologies for a Small Urban Area in North Carolina, US Department of Transportation, (1996)
- Evaluation and Implementation of a Knowledge-Based Approach to Automatic Scheduling and Dispatching System Using Automated Vehicle Location and Geographic Information System Technologies for a Small Urban Area in North Carolina, US Department of Transportation, (1997)
- Knowledge-Based Geographic Information Systems for the Identification, Analysis and Correction of Hazardous Highway Locations, US Department of Transportation, (1998)
- Integration of Safety and the Highway Capacity Manual, Missouri Research Board, (1999)
- Summer Transportation Institute, US Department of Transportation, (1999 to present)
- Safety and Design Improvements at Type II Median Crossovers on Rural High-Speed Expressways (Phase I Study), Missouri Department of Transportation, (2000)
- Safety and Design Improvements at Type II Median Crossovers on Rural High-Speed Expressways (Phase II Study), Missouri Department of Transportation, (2001)
- Rumble Strips in Missouri, Missouri Department of Transportation, (2002)

HONORS

- Listed in Marquis Who's Who in Science and Engineering since 1995
- Listed in Who's Who Among American Teachers, 2004
- Listed in America's Registry of Outstanding Professionals, 2003
- Listed in Marquis Who's Who in America, 2004
- Listed in Marquis Who's Who in the South and Southwest, 1996
- Elected Civil Engineering Department's "Teacher of the Year" 1992 and 1996
- Elected ASCE NC Section's 1994 Distinguished Educator
- Listed in the Marquis Who's Who in the World .
- Listed in the Dictionary of International Biography.
- Listed in Who's Who in Finance and Industry
- Winner (jointly with other members of Project Committee) of the ITE "1996 Traffic Engineering Council Outstanding Council Project Award."
- Listed in Marquis Who's Who Among America's Teachers, 2005

PROFESSIONAL AFFILIATIONS

- Transportation Research Board (TRB)
 - Chair Committee on Artificial Intelligence Applications in Transportation (2001-Present)
 - Member Committee on Statistical Methods and Computer Software in Transportation (1999-2003)
 - Member Joint Subcommittee for the Development of a Highway Safety Manual (2000-Present)
 - Reviewer for Transportation Research Record
- American Society of Civil Engineers (ASCE)
 - Chair, Transportation Safety Committee, Transportation and Development Institute (2002-Present)
 - ABET Visitor (2003-Present)
 - Member, Operations and Safety Council, Transportation and Development Institute (2002-Present)
 - Chair, Traffic and Highway Safety Committee, Highway Division (1999 - 2002)
 - Chair, Computing in Transportation Committee, Urban Transportation Division (1999 - 2002)
 - Member, Conference Committee and Editorial Board for AATT 2002
 - Member, Advanced Technologies Committee (2002 – Present)
 - Reviewer for Computing in Civil Engineering Journal
 - Reviewer for Transportation Engineering Journal
 - President North Carolina Section (1996-7)
- Institute of Transportation Engineers (ITE) – to 2003
 - Member Educators Council
 - UMR Student Chapter Advisor (1999 - 2003)
 - Chair Data Analysis subcommittee for Committee on Triple Left Turn Lanes (1995-1996)
- American Society for Engineering Education (ASEE)
- Tau Beta Pi
- State of North Carolina Geographic Information Coordinating Committee
 - Member GIS Affiliates Committee - served on Executive Board (1993-1998)
 - Member State Mapping Advisory Committee (1995-1997)