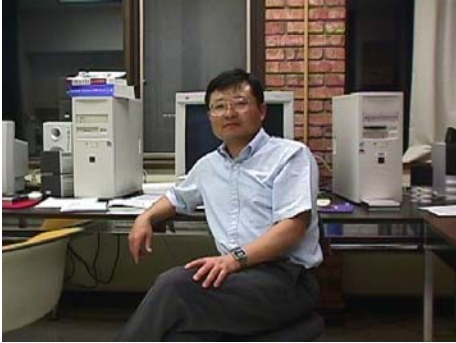


Last Updated: 1/1/2007

Curriculum Vita
TAEK MU KWON, Ph.D.



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EDUCATION

- Ph.D. in Electrical Engineering, June 1988, Department of Electrical and Computer Engineering, Florida Institute of Technology, Melbourne, FL
Dissertation: An Elementary Processor for a Digital Neural Computer.
- M.S. in Electrical Engineering, June 1985, Department of Electrical and Computer Engineering, Florida Institute of Technology, Melbourne, FL.
Thesis: Consonant Recognition Using Linear Predictive Coding.

PROFESSIONAL EXPERIENCE

- September 2002 to present: **Professor**, Department of Electrical and Computer Engineering, University of Minnesota, Duluth.
- September 1995 to August 2002: **Associate Professor**, Department of Electrical and Computer Engineering, University of Minnesota, Duluth.
- 1997 to present: **Associate Editor** of the International Journal on Intelligent Automation and Soft Computing.
- September 1988 to August 1995: **Assistant Professor**, Department of Electrical and Computer Engineering, University of Minnesota, Duluth.
- March 1984 to August 1988: Teaching Assistant and Research Associate, Department of Electrical and Computer Engineering, Florida Institute of Technology.

CONSULTING

- Minnesota Department of Transportation: Automated paging, actuation logging, and system integration, 1998-1999.
- Honeywell Inc.: High Resolution Image Reconstruction, 1995-1996.
- Schott Power Corporation: WAN/LAN data/voice/fax integration and installation, 1995-1996
- Hibbing Electronics: Design and Construction of Testing Equipment for Load Dump, Inductive Load Switching, Alternator Field Decay, Mutual Coupling, 1996-1997.
- Minnesota Power: Development of High Precision RPM and Phase meter, 1989-1990.

RESEARCH INTERESTS

In the past, my research was mainly focused on developing algorithms in neural networks, fuzzy systems, pattern recognition, and image processing. Presently, my research is more focused on developing transportation data and sensor applications. The topics include development of visibility measurement algorithms using image processing, next generation road weather information systems, large-scaled transportation data archival/retrieval systems, new magnetometer based vehicle sensor development, development of weigh-in-motion systems, renewable energy systems, and wireless sensor networks.

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Associate Editor of the International Journal on Intelligent Automation and Soft Computing, Since 1997.

Member of IEEE Computer Society

Member of IEEE Systems, Man, and Cybernetics Society

Member of International Neural Network Society

Member of KSEA (Korean Scientists and Engineers Association in America)

Reviewer of IEEE Transactions on Signal Processing

Reviewer of IEEE Transactions on Image Processing

Reviewer of IEEE Transactions on Neural Networks

Reviewer of IEEE Transactions on Circuits and Systems

Reviewer of IEEE Transactions on Fuzzy Systems

HONORS

- Received “Research Partnership Award” with a plaque from the Center for Transportation Studies, University of Minnesota, Twin Cities, April 24, 2001. Mn/DOT Partners involved in this award: Ed Fleege, Curt Pepe, and Roberta Dwyer.

The plaque reads “To recognize research projects within the CTS program that result in significant impacts on transportation, and to reward teams of individuals who draw on the strengths of their diverse partnerships to achieve those results.”

- Listed in Marquis Who's Who in the Media and Communication, 1997.
- Listed in Marquis Who's Who in the Midwest, 24th Edition.
- Received the Distinguished Achievement in Scientific Research Award from KSEA Florida Chapter, 1984.

US PATENTS

- “Video Camera-Based Visibility Measurement system,” US Patent #7,016,0456, United States Patent and Trademark Office. March. 21, 2006. Continuation of prior patent and includes “Relative visibility measurement system”
- “Video Camera-Based Visibility Measurement system,” US Patent #6,853,453, United States Patent and Trademark Office. Feb. 8, 2005.

TEACHING EXPERIENCE

A. Courses regularly taught in recent years

ECE 4321: Computer Networks
ECE 5800: Introduction to Artificial Neural Networks
ECE 5315: Multiprocessor-Based System Design
ECE 3325: Microcomputer System Design

B. Courses taught in the past

ECE 1315	Digital System Design
ECE 5580	Computer Fault Tolerance
ECE 5551	Switching Theory
ECE 3950	Design Workshop
CpE 3040	Digital System Design
CpE 3020	Introduction to Electronics
CpE 3035	Analog Electronic Circuits
CpE 3970	Senior Project I
CpE 3971	Senior Project II
CpE 3960	Independent Study
CpE 5960	Independent Study

COMMITTEES (UMD)

- McKnight Professor Search Committee, Chair
- ECE Department Merit Evaluation Policy, Chair
- College of Science Executive Committee
- ECE Faculty Search Committees
- Senior Project Policy Committee
- CSE Single Quarter Leave Committee
- Faculty Information Record Committee, Chair

RESEARCH GRANTS

- T.M. Kwon (PI), "Solar/Wind Integrated Renewable Power Stations as Complemented Source for Reducing Energy Costs in Intersection Signal Systems," LRRB, 2007-2009, \$129,845.
- T.M. Kwon (PI), "Development and Field Test of Advanced Dynamic LED Warning Signals for Unsignalized High-Speed Rural Blind Intersections Powered By Renewable Energy," LRRB, 2007-2009, \$99,940.
- T.M. Kwon (PI), "Development and Field Evaluation of Renewable Electric Power Station for Rural ITS Applications," ENTERPRISE Multi-State Pool Fund, \$65,000, 2006-2008.
- T.M. Kwon (PI), "Cellular Wireless Mesh Sensor Network for Comprehensive Spatial Traffic Movement Detection and Data Fusion," NATSRL, \$104,000, 2006-2007, funded.
- T.M. Kwon (PI), "TDRL Projects: Data Support for Access to Destinations Project and Mn/DOT Weigh-in-Motion Archive Design," NATSRL, \$73,135, 2006-2007, funded.
- T.M. Kwon (PI), "Development of Data Warehouse and Applications for Continuous Vehicle Class and Weigh-in-Motion (WIM) Data," Minnesota Department of Transportation, \$91,388, 2006-8, Funded.
- T.M. Kwon (PI), "Integrated TDRL Projects, DLL Traffic Software Development Package, Gravel-Road Traffic Counter, Intersection Movement Counter, and Hybrid Renewable Light Pole," NATSRL, \$101,900, 2005-2006.

- T.M. Kwon (PI), "Development of Portable Eight-Channel WIM Analysis System Based on Analog WIM Signals," Minnesota Department of Transportation, P2006015, \$89,611, 2005-2007.
- T.M. Kwon (PI), "Development of Transportation Data Center at TDRL: Archival of Large-Scaled Transportation Data, Analysis Tool Developments, and On-Line Data Support," NATSRL, \$89,908, 2004-2005.
- T.M. Kwon (PI), "Development of Transportation Data Center at TDRL: Archival of Large-Scaled Transportation Data, Analysis Tool Developments, and On-Line Data Support," \$101,900, 2003-2004.
- T.M. Kwon (PI), "Development of Transportation Data Center at TDRL: Archival of Large-Scaled Transportation Data, Analysis Tool Developments, and On-Line Data Support," \$141,660, 2002-2003.
- T.M. Kwon (PI), "Section Travel-Time Measurement and Vehicle Classification Using Inductance Signatures of Loop Detectors," Minnesota Department of Transportation, Nov 2003- Dec 2006, (\$51,000 direct)
- T.M. Kwon, S. Burns, D.B. Crouch, D.A. Wyrick, J.P. Riehl, "Development of Northland Advanced Transportation Systems Research Lab," 2001, \$3,691,200.
- T.M. Kwon (PI), "TMC Traffic Data Automation for Mn/DOT's Traffic Monitoring Program," Guide Star Fund, Minnesota Department of Transportation, Jan 2001 – Dec 2001. (\$79,819)
- T.M. Kwon (coPI), Max Donath (PI), Craig Shankwitz (coPI), "Intelligent Vehicle Initiative (IVI) - Specialty Vehicle Field Operational Test Program: Visibility Evaluation," FWAH, Mn/DOT, Oct. 1, 1999 - open, Total: \$6,550,000, (Funded by FHWA: \$3.89mil, Mn/DOT: \$0.97mil, Partners: \$1.69mil, \$194,475.84 for myself), 2000-2003.
- T. M. Kwon (PI), "World Wide Web Based Pavement Condition Reporting System," Minnesota Department of Transportation, Sep. 1, 1999 - 2000, \$44,094.
- T. M. Kwon (PI), "An automatic visibility measurement system based on video cameras: Phase II," Minnesota Department of Transportation, \$65,000, Funded, Nov. 1999-Present.
- T. M. Kwon (PI), "Development of Event-dialing/Auto-logging/Auto-paging System for Aitkinson Bridge Automated Deicing Spray," *Instrumentation Grant*, Minnesota Department of Transportation, Summer, 1988, (\$3,460).

- T. M. Kwon (PI), "Integration of RTMS and SQL to Mn/DOT Next Generation R/WIS," Minnesota Department of Transportation, Mn/DOT Agreement No., 74708, Work Order No. 101, \$66,359, Dec. 20, 1998 -open.
- T. M. Kwon (PI), "Design and Construction of Testing Equipment for Load Dump, Inductive Load Switching, Alternator Field Decay, Mutual Coupling," *Development Grant*, Hibbing Electronics, July 1996 – July 1997. (\$8,600)
- T. M. Kwon (PI), "Next Generation R/WIS: Video Clip Based Integrated Visual R/WIS," Minnesota Department of Transportation, Mn/DOT Agreement No. 74708, Work Order No. 47 and Supplement No. 1, \$54,000, July 1997-1999.
- T. M. Kwon (PI), "Airborne Thermography Imaging and the Development of a 2D Thermal Map for the State of Minnesota Highways," *DOT Federal Level Grant*, U.S. Department of Transportation, \$285,481.00, submitted in Feb. 1996 [Not funded].
- T. M. Kwon (PI), "Automatic Low-Visibility Warning System Based on Video Cameras," *Research Grant*, Mn/DOT Contract # 74708, Work Order No. 10}, Minnesota Department of Transportation, Aug. 1996 - open. (\$28,191)
- T. M. Kwon (PI), "Development of a Nondestructive Lake-Ice Thickness Surveying Instrument," *SOTA TECH funds*, Blandin Foundation, May 1996 -; \$39,000.00. [submitted in Feb. 1996, not funded]
- T. M. Kwon (PI) and W. Marko, "WAN and LAN design and installation for Schott Power Corporation," *Development Grant*, Schott Corporation, Dec. 95 - Mar. 96. (\$7,600)
- T. M. Kwon (PI) and M. G. Kang, "High Resolution Image Reconstruction for Honeywell," *Development Grant*, Honeywell Inc., Summer 1995. (\$6,854)
- T. M. Kwon (PI), "Intelligent Image Compression Based on Human Priority," *Grant-in-Aid of Research, Artistry, and Scholarship*, Graduate School, University of Minnesota, TC, submitted Mar. 6, 1995. (\$14,600)
- T. M. Kwon (co-PI), M. Zervakis, N. Shehadeh, "Design of RWIS Mobile Measurement System for Mn/DOT," *Development Grant*, Minnesota Department of Transportation, June 1994 - Dec. 1995. (\$24,872)
- T. M. Kwon (co-PI), M. Zervakis, N. Shehadeh, M. Patyra, and P. Cheung, Jiann-Shiou Yang, "Characterization of Contaminants in Wastepaper Bales Based on Physical Characteristics of Contaminants," *Development Grant*, Superior Recycled Fiber Industries, June 1994-September 1994. (\$35,794)

- T. M. Kwon (PI), "Image Restoration Using a Complementary Neural Network," *Faculty Summer Research Fellowship*, under the research proposal #16038, Graduate School, University of Minnesota, TC, Summer-II, 1994. (\$4,800)
- T. M. Kwon (PI), "Professional Development Fund for UNIX Administration," *Faculty and Academic Staff Professional Development Fund*, Academic Administration, UMD, Dec. 1993. (\$1,300)
- T. M. Kwon (PI), "Modular Analog CMOS VLSI Chips for Multilayered Neural Networks with On-Chip BEP Learning," *Grant from Institute of International Studies and Programs* (travel grant), University of Minnesota, TC, Nov. 1993. (\$800)
- T. Kwon (co-PI), C. Carroll, P. Cheung, L. Garber, M. Patyra, J. Yang, K. Yin, and M. Zervakis, "Wastepaper Classification and Processing," *Development Grant*, Superior Recycled Fiber Industries, May 25, 1993-Sep. 30, 1993. (\$71,000)
- T. M. Kwon (PI), "Development of a Self-Organizing and Trainable Fuzzy Logic Controller," *Grant-in-Aid of Research, Artistry, and Scholarship*, Graduate School, University of Minnesota, TC, under the research proposal #15463, Dec. 1, 1992 - June. 1, 1994. (\$11,197)
- T. M. Kwon (PI), "An Efficient Learning Algorithm for Gaussian Neural Networks," *Faculty Summer Research Fellowship*, Graduate School, University of Minnesota, TC, under the research proposal #15065, Summer 1992. (\$4,500)
- T. M. Kwon (PI), "Synthesis of Threshold Networks Using Convexity and Decomposition," *Grant-in-Aid of Research, Artistry, and Scholarship*, Graduate School, University of Minnesota, TC, under the research proposal #14305, Feb. 20, 1991 - Jun. 1992. (\$7,985)
- T. M. Kwon (PI), "A Stable Learning Algorithm in Feedforward Network for Binary Logic," *Faculty Summer Research Fellowship*, Graduate School, University of Minnesota, TC, Summer 1990. (\$4,300.00)
- T. M. Kwon (PI), "Development of General Purpose Network Memory," *Faculty Summer Research Fellowship*, College of Science and Engineering, University of Minnesota, Duluth, Summer 1989. (\$3,555.00)
- T. M. Kwon (PI), *Research Set-up Fund*, College of Science and Engineering, University of Minnesota, Duluth, Sep. 1989. (\$30,000.)
- T. M. Kwon (PI) and C. R. Carroll, "Development and Construction of Monitoring and Control Instruments for Minnesota Power Co.," *Development Grant*, Minnesota Power Co., Sep. 1989 - Sep. 1990. In this project, we developed a high precision RPM measurement and phase difference detection/synchronization unit based on hall-effect transducers and microcontrollers. These units were successfully used in the

field to monitor and control the speed of generators and to synchronize the phases of power signals. (\$12,500)

PUBLICATIONS

A. Chapters or Book Reports

- T.M. Kwon, *Development of Efficient Data Archival/Retrieval Model for R/WIS, RTMS, and Loop Traffic Data*, Minnesota Department of Transportation, MN/RC-2006-22, 59 pages, June 2006. (C#:81655, WO#:142)
- T.M. Kwon, *Annual Report: Transportation Data Research Laboratory 2004*, CTS 06-03, 80 pages, April 2006. (CTS P# 2004023)
- T.M. Kwon, *Blind Deconvolution of Vehicle Inductance Signatures for Travel-Time Estimation*, Minnesota Department of Transportation, MN/RC-2006-06, 63 pages, Feb, 2006, (C# 81665, W.O. #40).
- T.M. Kwon, *Atmospheric Visibility Measurements Using Video Cameras: Relative Visibility*, Minnesota Department of Transportation and Center for Transportation, Report No. CTS 04-03, July, 2004.
- T.M. Kwon, *TMC Traffic Data Automation for Mn/DOT's Traffic Monitoring Program*, Minnesota Department of Transportation, Report No. MN-RC-02004-29, July, 2004.
- T.M. Kwon and E. H. Feroz, "Self-Organizing Fuzzy and MLP Approaches to Detecting Fraudulent Financial Reporting," *Soft Computing in Financial Engineering*, Springer-Verlag Co. Feb. 1999, pp. 499-506, (edited by R. Ribeiro, R.R. Yarger, H-J Zimmermann and J. Kacprzyk.), (Comments: www.springer.de, search from books using title "Soft Computing in Financial Engineering")
- T.M. Kwon, *An Automatic Visibility Measurement System Based on Video Cameras*, Minnesota Department of Transportation, MN/RC-1998-25, Sep. 1998

B. Papers

- T. Kwon, "Signal processing of piezoelectric weigh-in-motion systems." IASTED Circuits, Signals, and Systems (CSS), Banff, Canada, 2007 July, under review.
- T. Kwon and Mark Flinner, "Automating acquisition of short-duration and continuous count data from ITS generated 30sec loop detector data," Session: Acquiring ITS Data in Concert with Your Traffic Data Program, *North American Travel Monitoring*

Exposition and Conference (NATMEC), June 4-7, 2006, Minneapolis, Minnesota, organized by TRB and sponsored by FHWA.

- T. Kwon and P. Nelson (ed), “Ensuring the integrity of critical ITS data,” *Sensor*, Intelligent Transportation Institute, Vol 6, issue 2, 2005
- T. Kwon and A. Parsekar, “Blind deconvolution processing of loop inductance signals for vehicle reidentification,” *Transportation Research Board 84th Annual Meeting*, Washington D.C., Jan. 2006.
- T. Kwon, “Route tracking of border crossing vehicles using inductance signatures of loop detectors,” IMS-5016, *2005 IEEE International Workshop on Measurement Systems for Homeland Security, Contraband Detection and Personal Safety*, IEEE Instrumentation and Measurement Society. 29-30 March 2005.
- T.M. Kwon and N. Dhruv, “Unified Transportation Sensor Data Format (UTSDF) for Efficient Archiving and Sharing of Statewide Transportation Sensor Data,” *Proc. of the Transportation Research Board 83rd Annual Meeting*, Washington D.C., Jan. 2004.
- T.M. Kwon, “New Efforts in Dealing with Missing Data for Mn/DOT’s Short-Duration and Continuous Count Traffic Monitoring Program,” 14th Annual Transportation Research Conference, River Center, St. Paul, Minnesota, (sponsored by Center for Transportation Study), April 29, 2003.
- T.M. Kwon, “Data Archive in Minnesota using Common Data Format (CDF),” Archived Data User Service (ADUS): System Designs and Implementation Examples, Jan 2003, sponsored by Urban Transportation Data and Information Systems (AID08), Statewide Transportation Data and Information Systems (AID09), and information Systems and Technology (A5003).
-
- T. Kwon, N. Dhruv, S. Patwardhan, E. Kwon “Common Data Format Archiving of Large-Scale Intelligent Transportation Systems Data for Efficient Storage, Retrieval, and Portability,” *Journal of the Transportation Research Board: Transportation Research Record 1836*, pp. 111-117, National Academy of Science, 2003.
- T. Kwon, “Measurement of Motorist’s Relative Visibility Index (MRVI) through Video Images,” *Proc. of the Transportation Research Board 81st Annual Meeting*, Washington D.C., Jan. 2002.
- E. Kwon, S. Kim, and T. Kwon, “Pseudo Real-Time Evaluation of Adaptive Traffic Control Strategies using Hardware-in-Loop Simulation,” Proceeding of the 27th Annual Conference of the IEEE Industrial Electronics Society, Denver, Colorado, Nov 29-Dec. 2, 2001, Accepted for publication.

- T. Kwon and Ed Fleege, "R/WIS Architecture for Integration and Expansion," Transportation Research Record 1700, pp. 1-4, *Journal of the Transportation Research Board*, The National Research Council, The National Academies, 2000.
- T. Kwon, "R/WIS Architecture for Integration and Expansion," Transportation Research Board, 79th Annual Meeting, published in the Conference Proceedings in CD-ROM, Washington D.C., Jan. 2000.
- E.H. Feroz, T.M. Kwon, V.S. Pastena, and K. Park, "The Efficacy of Red Flags in Predicting the SEC's Targets: An Artificial Neural Network Approach," *International Journal of Intelligent Systems in Accounting, Finance and Management*, vol. 9, pp. 145-157, July 2000.
- T.M. Kwon, P. Agrawal, and D. Crouch, "A ROI Search Method for Still Images Based on Set Descriptions," *International Journal on Multidimensional Systems and Signal Processing*, vol. 9, pp93-106, 1998.
- T.M. Kwon and Ed Fleege, "Automatic Visibility Measurement Methods Based on Video Cameras," *Proceedings of Xth PIARC International Winter Road Congress*, March 1998, Sweden.
- E.J. Fleege and T.M. Kwon, "Thermal Mapping at Mn/DOT," *Proc. of Fourth International Symposium on Snow Removal and Ice Control Technology*, pp. mm00-mm12, Reno, Nevada, Aug. 11-16, 1996.
- E. H. Feroz and T. M. Kwon, "Self-Organizing Fuzzy and MLP Approaches to Detecting Fraudulent Financial Reporting," *Proc. of IEEE/IAFE Computational Intelligence for Financial Engineering*, pp. 279-285, Mar. 1996.
- T. M. Kwon and Hui Cheng, "Contrast Enhancement for Back-Propagation Network," *IEEE Trans. on Neural Networks*, vol. 7, no. 2, pp. 515 - 524, Mar. 1996.
- T. M. Kwon and E. Feroz, "A Multi-layered Perceptron Approach to Prediction of the SEC's Investigation Targets," *IEEE Trans. on Neural Networks*, vol. 7, no. 5, pp. 1286 - 1290, Sep. 1996
- Hui Cheng and T. M. Kwon, "Neighboring Structure Based Modular Neural Network," *Proc. of World Congress on Neural Networks*, vol. 1, pp. 718-723, Washington D.C., July 1995.
-
- M. J. Patyra and T. M. Kwon, "A Degenerated Fuzzy-Number Processing System Based on Artificial Neural Networks," *Information Science*, vol. 86, pp. 211-226, 1995.

- M. E. Zervakis, T. M. Kwon, and J. Yang "Multiresolution Image Restoration in the Wavelet Domain," *IEEE Trans. on Circuits and Systems II: Analog and Digital Signal Processing*, vol. 42, No. 9, pp. 578-591, Sep. 1995.
- M. E. Zervakis, A. K. Katsaggelos, and T. M. Kwon, "A Class of Robust Entropic Functionals for the Enhancement of Images," *IEEE Trans. on Image Processing*, vol. 4, No 6, pp. 752-773, June, 1995.
- T. M. Kwon and M. E. Zervakis, "KwTA Networks and Their Applications," *International Journal on Multidimensional Systems and Signal Processing*, vol. 6, pp. 331-344, 1995.
- T. M. Kwon, M. E. Zervakis, and A. N. Venetsanopoulos, "Design and Analysis of a Class of Self-Organizing and Trainable Fuzzy Controllers," *Journal of Intelligent and Robotic Systems*, vol. 12, pp. 1-15, 1995.
- T. M. Kwon and M. E. Zervakis, "Design of Regularization Filters Using Linear Neural Networks," *Journal of Artificial Neural Networks*, vol. 1, No. 2, pp. 283-306, 1994.
- T. M. Kwon and M. E. Zervakis, "A Self-Organizing KNN-Fuzzy Controller and Its Neural Network Structure," *International Journal of Adaptive Control and Signal Processing*, vol. 8, pp. 407-431, Jul.-Aug., 1994.
- J-S Yang, M. E. Zervakis, and T. M. Kwon, "Application of the Quantitative Feedback Theory (QFT) to the Grumman F-14 Pitch Axis Control Problem," *Computers in Education Journal*, vol. IV, no. 3, pp. 75 - 81, Jul. - Sep. 1994.
- T. M. Kwon, Hui Cheng, and M. Zervakis, "Modular Neural Networks for Function Approximation," *Proc. of ANNIE-94*, vol. 4, pp. 11-16, Rolla, MO, Nov. 1994.
- T. M. Kwon, E. H. Feroz, and H. Cheng, "Preprocessing of Training Set for Back Propagation Algorithm: Histogram Equalization," *Proc. of the IEEE International Conference on Neural Networks-94*, vol. 1, pp. 425-430, Orlando, FL, June 26 - July 2, 1994.
- M. E. Zervakis, T. M. Kwon, and A. E. Savakis, "Operator Decomposition Using the Wavelet Transform: Fundamental Properties and Image Restoration Applications," *Proc. of the International Conference on Image Processing*, vol. 1, pp. 56-60, Austin, TX, Nov. 1994.
- M. E. Zervakis, T. M. Kwon, and A. V. Venetsanopoulos, "A Self-Organizing and Trainable Fuzzy-Neural Controller," *Proc. of the IEEE Mediterranean Symposium on New Directions in Control Theory and Applications*, June 1993.

- Y. Wang, T. M. Kwon, and O. Khatib, "Modular Analog CMOS VLSI Chips for Multilayered Neural Networks with On-Chip BEP Learning," *Proc. of the 3rd International Conference on VLSI and CAD (ICVC'93)*, vol. 1, pp. 299-302, Taejon, KOREA, Nov. 1993.
- T. M. Kwon and Y. Wang, "Digital Implementation of Programmable Neural Networks in Synchronous Pulse Mode," in *Intelligent Engineering Systems through Artificial Neural Networks (Proc. of ANNIE-93)*, Eds., C. H. Dagli, L. I. Burke, B. R. Fernandez, and J. Ghosh, vol. 3, pp.65-70, Rolla, MO, Nov. 1993.
- M. E. Zervakis and T. M. Kwon, "A Generalized Study of the Weighted Least-Squares for the Selection of the Regularization Parameter in Inverse Problems," *Proc. of the ISCAS'93 Symposium*, vol. 1, pp. 415-418, Chicago, IL, May 1993.
- M. J. Patyra and T. M. Kwon, "Processing of Incomplete Fuzzy Data Using Artificial Neural Network," *Proc. of the IEEE International Conference on Fuzzy Systems*, vol. I, pp. 429-434, San Francisco, CA, Mar. 28- Apr. 1, 1993.
- M. E. Zervakis and T. M. Kwon, "On the Application of Robust Functionals in Regularized Image Restoration," *Proc. of ICASSP-93*, vol. V, pp. 289-292, Minneapolis, MN, April 27-30, 1993.
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- M. E. Zervakis and T. M. Kwon, "Robust Estimation Techniques in Regularized Image Restoration," *SPIE Optical Engineering*, vol. 31, no. 10, pp. 2174-2190, Oct. 1992.
- T. M. Kwon and M. E. Zervakis, "A Parallel Sorting Network without Comparators: A Neural Network Approach," *Proc. of the International Joint Conference on Neural Networks (IJCNN)*, vol. I, pp. 701-706, Baltimore, MD, June 7-11, 1992.
- H. Alam, M. E. Zervakis, and T. M. Kwon, "Edge Evaluation: A Measure to Compare Image Restoration Techniques," *Journal of the Minnesota Academy of Science*, vol. 57, no.1, pp. 7-8, Spring 1992.
- T. M. Kwon, "A Guaranteed Training of Binary Pattern Mappings Using Gaussian Perceptron Networks," *Proc. of the International Joint Conference on Neural Networks (IJCNN)*, vol. III, pp. 614-619, Baltimore, MD, June 7-11, 1992.
- T. M. Kwon and M. E. Zervakis, "Gaussian Perceptron: Learning Algorithms," *Proc. of the International Conference on Systems, Man, and Cybernetics*, vol. 1, pp. 105-110, Chicago, IL, Oct. 1992.
- T. M. Kwon and M. E. Zervakis, "Design of Regularization Filters with Linear Neural Networks," *Proc. of the International Conference on Systems, Man, and Cybernetics*, vol. 1, pp. 416-421, Chicago, IL, Oct. 1992.

- T. M. Kwon and Y. Lu, "A Comparative Study of the Traveling Salesman Problem," *Intelligent Engineering Systems Through Artificial Neural Networks (Proc. of ANNIE-91)*, C. H. Dagli, S. R. T. Kumara, and Y. C. Shin, Eds., pp. 889-894, Rolla, MO, Nov. 1991.
- T. M. Kwon, "Gaussian Perceptron: Experimental Results," *Proc. of the International Conference on Systems, Man, and Cybernetics*, vol. 3, pp. 1593-1598, Charlottesville, VA, Oct. 1991.
- T. M. Kwon and M. E. Zervakis, "Robust Regularized Image Processing," in *Stochastic and Neural Methods in Signal Processing, Image Processing, and Computer Vision*, Su-Shing Chen, Ed., (Proc. of SPIE The International Society for Optical Engineering), vol. 1569, pp. 317-328, July 1991.
- T. M. Kwon, "Optimization for Precision in Speed and Phase Measurement Using a Microcontroller," *Proc. of the IEEE Southeastcon-91*, vol. 1, pp. 133-137, Williamsburg, VA, Apr. 1991.
- T. M. Kwon, "Threshold Net Synthesis Using Simulated Annealing," *Proc. of the IEEE Southeastcon-91*, vol. 2, pp. 1069-1073, Williamsburg, VA, Apr. 1991.
- T. M. Kwon and C. R. Carroll, "Optimization for Precision in Speed Measurement Using a Microcontroller," *Proc. of the 21st Annual Pittsburg Conference on Modeling and Simulation*, vol. 21, pp. 629-633, edited by W. G. Vogt and M. H. Mickle, Pittsburg, PA, May 1990.
- T. M. Kwon and M. E. Valdez, "Implementation of a Programmable Artificial Neuron Using Discrete Logic," *Proc. of the IEEE Southeastcon-89*, vol. 1, pp. 181-186, Columbia, SC, Apr. 1989.

D. Technical Manuals

- T. M. Kwon, "RWIS Measurement System for MN/DOT: User/Reference Manual", Minnesota Department of Transportation, over 300 pages, April 1995.
- T. M. Kwon, "Artificial Neural Networks: Theoretical Developments and Applications," Locally Produced Classroom Workbook, over 347 pages, Department of Computer Engineering, University of Minnesota, Duluth, 1992
- T. M. Kwon, "MC68000 Microprocessor Based Systems: Design and Construction Manual," Locally Produced Textbook, 62 pages, Department of Computer Engineering, University of Minnesota, Duluth, 1990.

INVITED SEMINARS

- “An Automatic Visibility Measurement System Based on Video Cameras,” Feb 22, 2001, As a part of Advanced Transportation Technologies Seminar Series, sponsored by Intelligent Transportation Systems (ITS) Institute, broadcasted to Twin Cities Campus through ITV (Interactive Television). Well received by industry participants and Twin Cities researchers.
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- “A New Histogram Equalization Technique for a Back-Propagation Network,” 5th KSEA Midwest Region Meeting, University of Minnesota Twin Cities, May 21, 1994.
- “An Introduction to Neural Network,” As a section of the CpE presentation to Minnesota Power Co. on Intelligent Approaches to Power System Problems, May 5, 1994.
- “Neural Networks and Pattern Classification,” Natural Resources Research Institute, April 20, 1993.