

Curriculum Vitae

Frank William Ciarallo

Education

- Ph.D., Industrial Administration, Graduate School of Industrial Administration, Carnegie Mellon University, 1993, Dissertation Title: "Planning with Yield Uncertainty", Advisor: Professor Ramakrishna Akella
- M.Sc., Manufacturing and Operations Systems, Graduate School of Industrial Administration, Carnegie Mellon University, 1988
- B.Sc., Electrical Engineering, Engineering and Public Policy, Carnegie Mellon University, 1986 (University Honors and Research Honors)

Employment

- March 2003 - Current, Assistant Professor, Biomedical, Industrial & Human Factors Engineering, Wright State University
- Jan. 1994 – Dec. 2001, Assistant Professor, Systems & Industrial Engineering, The University of Arizona
- Jan 2001 - May 2001, Visiting Assistant Professor, Haas School of Business, University of California, Berkeley
- Jan. 1992 – Dec. 1993, Adjunct Instructor, Systems & Industrial Engineering, The University of Arizona
- Summer 1988, Research Internship, IBM T.J. Watson Research Center, Yorktown Heights, NY.
- 1985 – 1992 (summers, contracts), Software developer, Allegheny Ludlum Corporation Research Center, Natrona Heights PA.

Current Research Interests

- Simulation: Perturbation Analysis Based Derivative Estimates for Optimization of Delays in Traffic Systems, Mobile Agent-Based Data Collection Frameworks for Distributed Simulation, Evaluation of Coordinated Ramp Metering for Freeway Traffic Management
- Inventory and Supply Chain Management: Interactions of Process Uncertainties and Demand Uncertainties across the Supply Chain, Production Systems with Random Capacity
- Inspection Planning: Error Modeling and Planning for Dimensional Inspections

Publications

Journal Publications

1. Y. Xu, S. Sen, F.W. Ciarallo, , "An Agent Based Data Collection Architecture for Distributed Simulations", to appear in *International Journal of Modeling & Simulation*, 2003
2. C.C. Yang, F.W. Ciarallo, M.M. Marefat, "Handling Uncertainties of Robot Manipulators and Active Vision by Constraint Propagation", *Journal of Robotic Systems*, vol. 19, no. 9, pp. 427-441, Sept. 2002
3. C.C. Yang, F.W. Ciarallo, "Optimized Sensor Placement for Active Visual Inspection", *Journal Of Robotic Systems*, vol. 18, no. 1, pp 1-15, 2001
4. C.C. Yang, M.M. Marefat, F.W. Ciarallo, "Interval Constraint Networks for Tolerance Analysis and Synthesis", *Artificial Intelligence for Engineering - Design, Analysis and Manufacturing*, vol. 14, no. 4, pp. 271-287, 2000

5. F.Y. Wang, T. Nan, F.W. Ciarallo, "Neuro-Fuzzy Networks: Adaptive Fuzzy Modeling and Control", *Journal of Computer Science and Information Management*, vol. 2, no. 3, 1999
6. C.C. Yang, M.M. Marefat, F.W. Ciarallo, "Modeling Errors for Dimensional Inspection Using Active Vision", *Robotics and Computer-Integrated Manufacturing*, vol. 15, no. 1, pp. 23-37, 1999
7. R.G. Askin, F.W. Ciarallo, N.H. Lundgren, "An Empirical Evaluation of Holonic and Fractal Layouts", *International Journal of Production Research*, Vol. 37, no. 5, pp. 961-978, 1999
8. C.C. Yang, M.M. Marefat, F.W. Ciarallo, "Error Analysis and Planning Accuracy for Dimensional Measurement in Active Vision Inspection", *IEEE Transactions on Robotics and Automation*, vol. 14, no. 3, pp. 476-487, 1998
9. F.W. Ciarallo, R. Akella, T.E. Morton, "A Periodic Review Production Planning Model with Uncertain Capacity and Uncertain Demand: Optimality of Extended Myopic Policies", *Management Science*, vol. 40, no. 3, pp. 320-332, 1994
10. A. Layadi, J.O. Artman, F.W. Ciarallo, "Torque, FMR and Domain Mode FMR Relations in Thin Oblique Anisotropy Axis Films", *IEEE Transactions on Magnetics*, vol. Mag-23, no. 5, 1987

Refereed Conference Proceedings

1. Y. Xu, F.W. Ciarallo, S. Sen, "A Multi-Agent Data Collection Architecture for Distributed Simulations", *Proceedings of the 2002 Advanced Simulation Technologies Conference*
2. S. Sen, F.W. Ciarallo, "Modeling Parallel Realities through Distributed Simulation", *Proceedings of the IIE 2001 Research Conference*
3. S. Sen, A. Dixit, Y. Xu, A.L. Barath, F.W. Ciarallo, "The Open Bit Mine: A Laboratory Test-Bed for Studying Parallel Realities", *Proceedings of the IIE 2001 Research Conference*
4. X. Gu, M. Marefat, F.W. Ciarallo, "A Robust Approach for Sensor Placement in Automated Vision Dimensional Inspection", *Proceedings of the 1999 IEEE International Conference on Robotics and Automation*, vol. 4, pp. 2602-2607
5. K.L. Crosby, C.C. Yang, F.W. Ciarallo, M.M. Marefat, "Camera Settings for Dimensional Inspection Using Displacement and Quantization Errors", *Proceedings of the 1997 IEEE International Conference on Robotics and Automation*, vol. 3, pp. 2270-2275
6. C.C. Yang, M.M. Marefat, F.W. Ciarallo, "Tolerance Analysis and Synthesis by Interval Constraint Networks", *Proceedings of the 1997 IEEE International Conference on Robotics and Automation*, vol. 3, pp. 2522-2527
7. C.C. Yang, F.W. Ciarallo, "Minimizing the Probabilistic Magnitude of Active Vision Errors Using a Genetic Algorithm", *Proceedings of the 1997 IEEE International Conference on Systems, Man and Cybernetics*, vol. 3, pp. 2713-2718
8. F.W. Ciarallo, C. C. Yang, "Optimization of Propagation in Interval Constraint Networks for Tolerance Design", *Proceedings of the 1997 IEEE International Conference on Systems, Man and Cybernetics*, vol. 2, pp. 1924-1929
9. F.W. Ciarallo, E.H. Robinson, "Assignment of Program Units to Minimize the Number of Calls Between Memory Blocks", *Proceedings of the 1997 IEEE International Conference on Systems, Man and Cybernetics*, vol. 2, pp. 1906-1910
10. F.W. Ciarallo, C.C. Yang, M.M. Marefat, "Displacement Errors in Active Visual Inspection", *Proceedings of 1996 IEEE International Conference on Robotics and Automation.*, vol. 4, pp. 3240-3245
11. R.G. Askin, N. Lundgren, F.W. Ciarallo, "A Material Flow Based Evaluation of Layout Alternatives for Agile Manufacturing," *Proceedings of the 1996 International Material Handling Research Conference*, The Netherlands, pp. 37-55
12. C.C. Yang, M.M. Marefat, F.W. Ciarallo, "Analysis of Errors in Dimensional Inspection Based on Active Vision", *Proceedings of the SPIE - The International Society for Optical Engineering*, vol. 2345 (1994), pp. 96-104

13. F.W. Ciarallo, "Planning Production of Multiple Items with Uncertain Capacity, Uncertain Demand and Large Setup Costs", *Proceedings of the 1994 ORSA Technical Section on Manufacturing Management Conference*, pp. 127-132

Working Papers and others

11. F.W. Ciarallo, R. Akella, "Planning Production of Multiple Items with Uncertain Capacity and Uncertain Demand", Working Paper
12. F.W. Ciarallo, M.M. Marefat, X. Gu, "A Robust Approach for Sensor Placement in Automated Vision Dimensional Inspection", Working Paper
13. C.C. Yang, M.M. Marefat, F.W. Ciarallo, "A Class of Constraint Networks with Real, Interval, and Integer Values for Robotics and Mechanical Design", Working Paper
14. "A Perturbation Analysis Approach to Traffic Signal Optimization", with V. Kaduwela, D. Lucas, K.L. Head, Working Paper
15. "Planning for Production of a Set of Semiconductor Components with Random Wafer and Component Yield", with R. Akella, G. Cornuejols, Working Paper
16. "Visual Inspection Planning with the Sensor Constraint Graph", with K. Crosby., C.C Yang, and M.M. Marefat, Working Paper

Scholarly Presentations

Conference Presentations

1. F. W. Ciarallo, (speaker) S. Sundaram, "Multi-Item Production Planning with Resource Failures: Feasibility, Safety Stocks & Inventory Targets", INFORMS National Meeting, San Antonio, TX, November 2000
2. X. Gu, M. Marefat, F.W. Ciarallo (speaker), "A Robust Approach for Sensor Placement in Automated Vision Dimensional Inspection", *1999 IEEE International Conference on Robotics and Automation*, Detroit, MI, May 1999
3. F.W. Ciarallo (speaker), P.B. Mirchandani, "A Simulation Model for Supporting Highway Patrol Unit Assignments", Industrial Engineering Research '99 Conference, Phoenix, AZ, May 23, 1999
4. F.W. Ciarallo (speaker), M. Haouari, "Production Planning Strategies for Multiple Items with Random Capacity and Cyclic Schedules", Industrial Engineering Research '99 Conference, Phoenix, AZ, May 23, 1999
5. L. Head, F.W. Ciarallo, D. Lucas (speaker), V. Kaduwela, "A Perturbation Analysis Approach to Traffic Signal Optimization", *INFORMS National Meeting*, Washington, D.C., May 5-8, 1996
6. F.W. Ciarallo (speaker), P. Mirchandani, L. Shen, J. Wilson, "Simulation Support for Allocation of Highway Patrol Units for the Arizona Department of Public Safety", *INFORMS National Meeting*, Atlanta, GA, November 3-6, 1996
7. F.W. Ciarallo, "Planning for Production of Multiple Items with a Common Component Subject to Random Yield," *INFORMS National Meeting*, New Orleans, LA, October 31, 1995
8. F.W. Ciarallo, "Production Planning in Multiple Stage Systems with Production Uncertainties", Third Industrial Engineering Research Conference, Atlanta, GA, May 18-19, 1994
9. F.W. Ciarallo, "Planning Production of Multiple Items with Uncertain Capacity, Uncertain Demand and Large Setup Costs", *1994 ORSA Technical Section on Manufacturing Management Conference*, Pittsburgh, PA, June 1994
10. F.W. Ciarallo (speaker), R. Akella, "Planning Production of Multiple Items with Uncertain Capacity and Uncertain Demand", *TIMS/ORSA National Meeting*, Boston, MA, April, 1994
11. F.W. Ciarallo (speaker), R. Akella, G. Cornuejols, "Planning for Production of a Set of Semiconductor Components with Random Wafer and Component Yield", *ORSA/TIMS National Meeting*, Phoenix, AZ, November 1993

12. F.W. Ciarallo (speaker), R. Akella, G. Cornuejols and A. Kumar, "Strategies for Semiconductor Wafer Design: The Chip Allocation Problem", *ORSA/TIMS* National Meeting, Philadelphia, Pa, October 1990
13. F.W. Ciarallo (speaker), and R. Akella, "Periodic Review Models with Uncertain Demand and Uncertain Capacity", *ORSA/TIMS* National Meeting, New York, NY, October, 1989

Seminars, and Other Presentations

1. "Planning Production of Semiconductor Components with Yield Uncertainty", SIE Departmental Seminar, March 3, 1994
2. "Models of Production Planning with Random Capacity", SIE Departmental Seminar, February 23, 1995
3. "Simulation Support for Allocation of Highway Patrol Units for the Arizona Department of Public Safety", SIE Departmental Seminar, November 14, 1996
4. "Job Configuration for Flexible Semiconductor Wafer Fabrication", Department of Industrial and Management Systems Engineering, Arizona State University, March 11, 1997
5. "Job Configuration for Flexible Wafer Fabs", *SRC Workshop on Operational Methods in Semiconductor Manufacturing*, University of California/Berkeley, February 19-20, 1997
6. "Assignment of Program Units to Minimize the Number of Calls Between Memory Blocks", Motorola Advanced Messaging Systems Division, Fort Worth, Texas, October 27, 1997
7. "Production Planning Models with Uncertain Production and Uncertain Demand", Applied Math Modeling Seminar, University of Arizona, April 16, 1998

Grants and Contracts

1. "A Simulation Tool for Design and Evaluation of Intermodal Transport Facilities", Arizona Department of Transportation, PI (100%), \$58,000, January 2000
2. "MSOM Millenium Project Grant", Manufacturing and Service Operations Management Society, *The Institute for Operations Research and the Management Sciences*, PI (100%), \$1,000, October 1999
3. "A Simulation Platform for Experimentation and Evaluation of Distributed-Computing Systems (SPEED-CS)", Co-PI, (25%), National Science Foundation, \$1,000,000 for 3 years, June 1999
4. "RHODES-ITMS Ramp Metering Field Test", Co-PI, (50%), Arizona Department of Transportation, \$100,000, August 1998
5. "MSOM Electronic Communications Initiative Grant", Manufacturing and Service Operations Management Section, *The Institute for Operations Research and the Management Sciences*, PI (100%), \$2,500, April 1998
6. "Simulation Model for Highway Patrol Units Assignments", Co-PI (50%), Arizona Department of Public Safety, \$15,000, June 1996
7. "Production Planning Software Incorporating Uncertainties", University of Arizona Vice President for Research Small Grants Program, PI (100%), \$5000, May 1994
8. "Intelligent Flexible Computer Integrated Inspection Based on CAD Solid Models", AIMST Seed Grant Program, Co-PI (50%), \$4500, January, 1993

Service

Outreach

Steering Committee Member, *Arizona Council for Economic Conversion*, 1993-97

Coordinated the "1996 Pre-Engineering Summer Workshop for Minorities and Women in Engineering" for one week during the program for 10th graders, June 12-16, 1995

Development of computer based motion control software/hardware system for the Department of Theatre Arts, The University of Arizona, used to control scenery in the 1998 production of *Blood Brothers*

Department Service

SIE Personal Computer Lab Software/Hardware/Monitoring Coordinator, 1992-present

Student Society Advisor, SIE Department, 1993-94

Undergraduate Academic Advisor, SIE Department, 1994-97

Undergraduate Committee, SIE Department, 1994-97, 1999-2000

Computer Science/CCIT Liaison, SIE Department, 1995-99

Faculty Recruiting Committee, SIE Department, 1998-99

Academic Program Review Committee, SIE Department, 1999-2000

Professional Service

Newsletter Editor (1994-present) for the Manufacturing and Service Operations Management Society of *INFORMS* (www.informs.org)

Judge for Student Paper Competition, IIE Regional Student Conference, January 1994, Tucson, AZ

Webmaster (1996-present) for the Manufacturing and Service Operations Management Society of *INFORMS*, (www.sie.arizona.edu/MSOM)

Program committee member, *1996 International Conference on Data and Knowledge Systems for Manufacturing and Engineering*, Tempe, Arizona, October 24-25, 1996

Session Co-Chair (with C.C. Yang), invited session on "Constraints and Optimization", *IEEE Systems Man and Cybernetics Conference*, Dallas, TX, October 1997

Session Chair, invited session on "Validation and Optimization in Supply Chains", *Industrial Engineering Research '99 Conference*, Phoenix, AZ, May 23-24, 1999

Judge, 1999 Student Research Paper Competition, Manufacturing and Service Operations Management Society of *INFORMS*

Referee for technical journals including: *Management Science*, *Operations Research*, *IIE Transactions*, *Journal of Production and Operations Management*, *International Journal of Production Economics*, *European Journal of Operational Research*, *International Journal of Flexible Manufacturing Systems*, *IEEE Transactions on Semiconductor Manufacturing*, *IEEE Conference on Decision and Control*

Member, Institute for Operations Research and the Management Sciences

Member, Institute for Electrical and Electronics Engineers

Honors & Awards

Award for Distinguished Service, 2000, Manufacturing & Services Operations Management Society, INFORMS

Academic Years 1994-95, 1996-97, 1998-99, 1999-2000 Award for *Excellence at the Student Interface*, Systems & Industrial Engineering, The University of Arizona

William Larimer Mellon Fellowship (1986-1990), Graduate School of Industrial Administrations, Carnegie Mellon University

Carnegie Mellon graduate (1986) with *University Honors* and *Carnegie Institute of Technology Research Honors*

Eta Kappa Nu (Electrical Engineering) and *Tau Beta Pi* (Engineering) Honorary Societies

Burroughs Scholar (1985), Carnegie Mellon University