

Professional Experience

- 2004-present Laboratory-Graduate Research Appointment
Center for Complex Adaptive Agent Systems Simulation
Decision and Information Sciences Division
Argonne National Laboratory, Argonne, IL
- Design of intelligent multi-agent systems for monitoring and control of spatially distributed processes.
 - Application of agent-based control systems control framework to heterogeneous chemical reactor networks.
- 1997-present Research Assistant
Department of Chemical and Environmental Engineering
Illinois Institute of Technology, Chicago, IL
- Development of numerical simulation and bifurcation software for analysis of continuous stirred tank reactor networks with autocatalytic species.
 - Agent-based system design for control of spatially distributed networks.
 - Knowledge-based system development in Gensym G2 by integrating statistical process monitoring and artificial intelligence techniques for continuous and batch polymerization processes, fed-batch fermentation processes, and medical decision support systems.
 - Web-based educational simulation tools for fed-batch fermentation processes and glucose-insulin levels in the human body.
- 1997-2000 Intern Engineer
Process Monitoring and Control Research Group
Air Liquide, Countryside, IL
- Conduct research on novel applications integrating real-time statistical process monitoring techniques with hardware sensors.
 - Development of real-time process monitoring and control software for near-infrared moisture sensors.
 - Maintenance and service of near-infrared moisture sensor hardware including instrument calibration, alignment of sensor optics, and repair and construction of integrated circuit boards.
 - Application design in LabVIEW for automated real-time process data collection and logging from multiple laboratory instruments.
- 1996 Summer Intern
Drug Design Research Group
Searle, Skokie, IL
- Development of in-house pharmaceutical research software for cataloging chemical and biological assay data.
 - Instruct employees in the use of in-house software.
 - Document creation for in-house software.

Education

- December 2005 PhD, Chemical Engineering, Illinois Institute of Technology, Chicago, IL
 • Dissertation: “Complex System Modeling and Control with Distributed Intelligent Agents;” Advisor: Ali Cinar, PhD.
- 1999 MS, Chemical Engineering, Illinois Institute of Technology, Chicago, IL
 • Thesis: “An Integrated Knowledge-Based System for Automated System Identification, Monitoring, and Sensor Audit for Multivariable Processes;” Advisor: Ali Cinar, PhD.
- 1997 BS (Honors), Chemical Engineering, Illinois Institute of Technology, Chicago, IL

Licensure

Professional Engineer Intern, Illinois

Technical Skills

General skills in modeling, statistics and computing. Specific expertise and interests in:

- Artificial intelligence: software agents; knowledge and rule-based systems; neural networks
- Statistics: empirical modeling; multivariate statistical analysis
- Programming languages: C, JAVA, FORTRAN, Matlab, Maple, LabVIEW, and G2
- Computing platforms: Windows 2000/NT/XP, UNIX/Linux; some Macintosh
- Computing hardware: Intel/AMD system construction and maintenance
- Text formatting and office computing: LaTeX, MS Office, Illustrator, Photoshop, GoLive

Publications

Journal Publications

Tatara, E., F. Teymour and A. Cinar, Control of Complex Distributed Systems with Distributed Intelligent Agents, *Submitted to Journal of Process Control*, 2005.

Tatara, E., I. Birol, F. Teymour and A. Cinar, Measuring Complexity in Reactor Networks with Cubic Autocatalytic Reactions, *Industrial and Engineering Chemistry Research*, **44**, 2781-2791, 2005.

Tatara, E., I. Birol, F. Teymour and A. Cinar, Agent-Based Control of Autocatalytic Replicators in Networks of Reactors, *Computers & Chemical Engineering*, **29**, 807-815, 2005.

Tatara, E., I. Birol, F. Teymour and A. Cinar, Static and Dynamic Behavior of Autocatalytic Replicators in Reactor Networks, *Industrial and Engineering Chemistry Research*, **43**, 3972-3993, 2004.

Undey, C., S. Ertunc, E. Tatara, F. Teymour and A. Cinar, Batch Process Monitoring and Diagnosis: Application to Polymerization Systems, *Macromolecular Symposia*, **206**(1), 121-134, 2004.

Undey, C., E. Tatara and A. Cinar, Intelligent Real-time Performance Monitoring and Quality Prediction for Batch/fed-batch Cultivations, *Journal of Biotechnology*, **108**(1) 61-77, 2004.

Undey, C., E. Tatara and A. Cinar, Real-time Batch Process Supervision by Integrated Knowledge-Based Systems and Multivariate Statistical Methods, *Engineering Applications of Artificial Intelligence*, **16**(5-6) 555-566, 2003.

Tatara, E. and A. Cinar, An Intelligent System for Multivariate Statistical Process Monitoring and Diagnosis, *ISA Transactions*, **41**, 255-270, 2002

Tatara, E. and A. Cinar, Interpreting ECG Data by Integrating Statistical and Artificial Intelligence Tools, *IEEE Engineering in Medicine and Biology*, **21**(1) 36-41, 2002.

Refereed Conference Proceedings

Tatara, E., M. North, C. Hood., F. Teymour and A. Cinar, Agent-Based Control of Spatially Distributed Chemical Reactor Networks, *Proceedings of the International IFAC Symposium. Advanced Control of Chemical Processes (ADCHEM)*, April 2-5, 2006.

Tetiker, D., E. Tatara, M. North, C. Hood, F. Teymour and A. Cinar, Agent-Based Approach to Reconfiguration of Distributed Chemical Reactor Networks, *Proceedings of the American Control Conference*, Accepted, 2006.

Tatara, E., I. Birol, F. Teymour and A. Cinar, Agent-Based Control of Discrete Spatially Distributed Systems, *Proceedings of the 16th IFAC World Congress*, Prague, Czech Republic, July 4-8, 2005.

Tatara, E., I. Birol, F. Teymour, and A. Cinar, An Agent-Based Framework for Control of Reactor Networks with Autocatalytic Replicators, *Proceedings of the 7th International Symposium on Dynamics and Control of Process Systems (DYCOPS 7)*, Cambridge, MA, 2004.

Undey, C., E. Tatara, B. A. Williams, G. Birol and A. Cinar, A Hybrid Supervisory Knowledge-Based System for Monitoring of Penicillin Fermentation, *Proceedings of the American Control Conference*, Chicago, IL, 3944-3949, 2000.

Undey, C., E. Tatara, B. A. Williams, G. Birol and A. Cinar, On-line Real-Time Monitoring of Penicillin Fermentation, , *Proceedings of the International IFAC Symposium. Advanced Control of Chemical Processes (ADCHEM)*, pp. 243-248, Pisa, Italy, 2000.

Tatara, E., A. Cinar, J. DeCicco, R. Raj, N. Aggarwal, M. Chesbro, J. Evans, M. Shah-Khan and A. Zloza, Patient Monitoring and Diagnosis Assistance by Integrating Statistical and Artificial Intelligence Tools, *Proceedings of the First Joint BMES/EMBS Conference*, Atlanta, GA, 699, 1999.

Cinar, A., E. Tatara, J. DeCicco, R. Raj, N. Aggarwal, M. Chesbro, J. Evans, M. Shah-Khan and A. Zloza, Automated Patient Monitoring and Diagnosis Assistance by Integrating Statistical and Artificial Intelligence Tools, *Proceedings of the First Joint BMES/EMBS Conference*, Atlanta, GA, 700, 1999.

Norvilas, A., E. Tatara, A. Negiz, J. DeCicco and A. Cinar, Statistical Monitoring and Fault Diagnosis of a Continuous Polymerization Reactor by Interfacing Knowledge-Based Systems and Multivariate SPC Tools, *Proceedings of the American Control Conference*, 3373-3377, 1998.

Tatara, E., A. Negiz, A. Norvilas, J. DeCicco and A. Cinar, Intelligent Sensor Auditing by Interfacing Knowledge-Based Systems and Multivariate SPM Tools, *Prep. IFAC Workshop on On-line Fault Detection and Supervision in the Chemical Process Industries*, Lyon, France, 1998.

Presentations in Meetings

Tatara, E., F. Teymour and A. Cinar, Agent-based Control of Spatially Distributed Chemical Reactor Networks, *AIChE Annual Meeting*, Cincinnati, OH, November, 2005.

Tatara, E., A. Artel, M. North, F. Teymour, C. Hood and A. Cinar, Agent-Based Control for Dynamic Configuration of Spatially Distributed Networks, *Agent 2005: Generative Social Processes, Models, and Mechanisms*, Chicago, Illinois, October 13-15, 2005.

Tatara, E., M. North, C. Hood, F. Teymour and A. Cinar, Agent-based Control of Spatially Distributed Chemical Reactor Networks, *The Third International Workshop on Engineering Self-Organising Applications (ESOA'05)*, Utrecht, The Netherlands, 26th July 2005.

Balasubramanian, S., E. Tatara, I. Birol, F. Teymour and A. Cinar, Reconfiguration of Production in CSTR Networks: Flexibility of Heterogeneous Setups , *AIChE Annual Meeting*, Austin, TX, November 7-12, 2004.

Tatara, E., I. Birol, F. Teymour and A. Cinar, Static and Dynamic Behavior of Autocatalytic Replicators in Heterogeneous Reactor Networks, *AIChE Annual Meeting* (Paper 457f), San Francisco, CA, November 16-21, 2003.

Tatara, E., I. Birol, F. Teymour and A. Cinar, Agent-Based Supervision and Control of Competitors in a Heterogeneous Environment, *Agent 2003: Challenges in Social Simulation*, Chicago, Illinois, October 3-4, 2003.

Undey, C., S. Ertunc, E. Tatara, F. Teymour and A. Cinar, Batch Process Monitoring and Diagnosis: Application to Polymerization Systems, *Polymer Reaction Engineering-5*, Quebec City, Canada, May 18-23, 2003.

Undey, C., S. Ertunc, E. Tatara and A. Cinar, Real-time Fault Detection, Diagnosis, and Quality Prediction in Batch Fermentations, *225th ACS National Meeting*, New Orleans, LA, March 23-27, 2003.

Tatara, E., I. Birol, F. Teymour and A. Cinar, Autocatalytic Species Competition in a Heterogeneous Environment, *AIChE Annual Meeting* (Paper 277e), Indianapolis, IN, November 3-8, 2002.

Undey, C., E. Tatara and A. Cinar, Real-time Knowledge-based System and Statistical Process Monitoring, Quality Prediction and Fault Diagnosis for Batch Fermentation Processes, *AIChE Annual Meeting* (Paper 291e), Indianapolis, IN, November 3-8, 2002.

Cinar, A., C. Undey and E. Tatara, "Data-based Modeling, Monitoring and Fault Diagnosis in Batch Process Operations", *The Southern Great Lakes Local Section of the Society for Industrial Microbiology (SIM) Annual Mtg.*, University of Notre Dame, Notre Dame, IN, Oct.19, 2002.

Tatara E., C. Undey, B. Williams, G. Birol and A. Cinar, A Real-Time Knowledge-Based System for Automated Monitoring and Fault Diagnosis of Batch Bioprocesses, *AIChE Annual Meeting*, Los Angeles, CA 2000.

Tatara, E. and A. Cinar, An Integrated Knowledge-Based System for Automated System Identification, Monitoring, and Sensor Audit for Multivariable Processes, *Midwest Control Conference*, Urbana, IL, May 17, 1999.

Tatara, E., C. Undey, and A. Cinar, Batch Process Monitoring, Diagnosis, and Control, *Gensym Corporation*, Elk Grove Village, IL, 1999.

Tatara, E., A. Negiz, A. Norvilas, J. DeCicco, and A. Cinar, A Hybrid System For Intelligent Sensor Auditing by Integrating Multivariate SPM Tools With Knowledge Based Systems, *AIChE Annual Meeting*, Miami, November 1998.

Tatara, E., A. Negiz, A. Norvilas, J. DeCicco, and A. Cinar, Intelligent Process Monitoring and Diagnosis by Interfacing Knowledge-Based and Statistical Methods, *AIChE Annual Meeting*, Miami, November 1998.

Honors and Awards

2005	Sigma Xi Research Award
2004	Laboratory-Graduate Research Appointment, Argonne National Laboratory
1999	First Place, Inter-Professional Projects Award, Illinois Institute of Technology Fourth Annual Research Conference
1998	Honorable Mention, AIChE Annual Meeting CAST Director's Award from the Computing and Systems Technology Division.
1998	First Place, Inter-Professional Projects Award, Illinois Institute of Technology Third Annual Research Conference
1997	Illinois Institute of Technology Distinguished Service Award
1997	Second Place, Undergraduate Research Award, Illinois Institute of Technology Second Annual Research Conference

Professional Memberships and Societies

American Institute of Chemical Engineers
American Chemical Society
Institute of Electrical and Electronic Engineers
Sigma Xi Scientific Research Society

References are available upon request.