AYTEN TURKCAN

CURRENT ADDRESS

Northeastern University
Mechanical and Industrial Engineering
360 Huntington Avenue, 334 SN
Boston, MA 02115

Phone: +1 (617) 373-2032
E-mail: a.turkcan@neu.edu
URL: http://www.coe.neu.edu/∼aturkcan/

RESEARCH INTERESTS

Methodology
Combinatorial optimization, multi-criteria optimization, constraint programming, stochastic optimization, simulation

Application areas
Healthcare systems engineering: Clinical appointment scheduling, chemotherapy operations planning and scheduling, operating room planning and scheduling, planning of mental health services, workflow analysis

Production and transportation systems: Predictive/reactive scheduling, train scheduling, flexible manufacturing systems, cellular manufacturing systems

EDUCATION

Ph.D. in Industrial Engineering, Bilkent University, Ankara, Turkey. (May 2003)
"Essays on Scheduling with Controllable Processing Times in Flexible Manufacturing Systems."
Advisor: M. Selim Akturk

M.S. in Industrial Engineering, Bilkent University, Ankara, Turkey. (September 1998)
"Design of Cellular Manufacturing Systems Using a Holonistic Approach."
Advisor: M. Selim Akturk

B.S. in Industrial Engineering, Bilkent University, Ankara, Turkey. (June 1996)

EMPLOYMENT

Assistant professor, Northeastern University, Boston, MA
Department of Mechanical and Industrial Engineering
08/2010 - present

Associate Research Scientist, Purdue University, West Lafayette, IN
Regenstrief Center for Healthcare Engineering
08/2007 - 08/2010

Assistant professor, Middle East Technical University, Ankara, Turkey
Industrial Engineering Department
07/2005 - 08/2007

Visiting assistant professor, Bilkent University, Ankara, Turkey
Industrial Engineering Department
06/2005 - 07/2005

Post-doctoral researcher, Purdue University, West Lafayette, IN
School of Industrial Engineering
10/2003 - 12/2004

Research and teaching assistant, Bilkent University, Ankara, Turkey   09/1996 - 05/2003
    Department of Industrial Engineering

Visiting research scientist, Lehigh University, Bethlehem, PA   08/2001- 12/2001
    Industrial and Systems Engineering Department

Honors and Awards

NATO-B1 scholarship, The Scientific and Research Council of Turkey $10/2003 - 04/2004$

NATO-A2 scholarship, The Scientific and Research Council of Turkey $08/2001 - 12/2001$

Scholarship for BS, MS and PhD, Bilkent University $09/1992 - 05/2003$

Scholarship for high school, BS and MS, Izzet Baysal Foundation $09/1987 - 08/1998$

Projects

1. PCORI; Improving Healthcare Systems for Access to Care and Efficiency by Underserved Patients. PI Doebbeling and co-PIs Toscos, Turkcan. A collaborative effort among Indiana University, Indiana University Fort Wayne, NEU. 06/01/2013 - 05/31/2016.

2. VA HSR&D; Simulation based planning model for mental health care services. PI Doebbeling and co-PIs Mayeda, Turkcan, Konrad. A collaborative effort among VA Indianapolis, NEU, WPI. 09/01/2009 - 10/31/2012.

3. NIH STTR Phase I; Optimizing operating room efficiency. PI Doebbeling and co-PIs Baxter, Burton, Lawley, Turkcan. A collaborative effort among Advanced Process Combinatorics, Purdue and Indiana. 08/01/2010 - 07/31/2011.

4. NSF CMMI and Regenstrief Foundation; GOALI: Patient scheduling for primary care clinics: Theory and implementation. PI Lawley and co-PIs Sands, Muthuraman, Willis. A collaborative effort among Purdue and Indiana. 08/01/2007 - 07/31/2010.

5. RCHE seed grant; The impact of no-show behavior on diabetes management. PI Sands and co-PI Lawley, Purdue University, 07/01/2009 - 06/30/2010.

6. Union Pacific; Rock train scheduling methods for Union Pacific. PI Lawley and co-PI Turkcan, Purdue University, 04/15/2004 - 12/31/2004.

7. METU BAP; Facility location and layout problems in supply chains. PI Sepil and co-PIs Sural, Turkcan, Middle East Technical University, 01/01/2006 - 12/31/2007.

8. METU BAP; Multi-criteria rescheduling with controllable processing times. PI Turkcan, Middle East Technical University, 01/01/2006 - 12/31/2006.

Publications

Journal Papers

1. Turkcan, A., Zeng, B., and Lawley, M.A., Chemotherapy Operations Planning and Scheduling, *IIE Transactions on Healthcare Systems Engineering*, 2 (1), 31–49, 2012.

2. Nuti, L., Lawley, M., Turkcan, A., Tian, Z., Zhang, L., Chang, K., Willis, D., Sands, L., No-shows to primary care appointments: Subsequent acute care utilization among diabetic patients. *BMC Health Services Research*, 12: 304, 2012.

3. Turkcan, A., Zeng, B., Muthuraman, K., and Lawley, M.A., Sequential Clinical Scheduling with Service Criteria. *European Journal of Operational Research*, 214, 780–795, 2011.

4. Daggy, J., Lawley, M.A., Willis, D.R., Thayer, D., Suelzer, C., DeLaurentis, P., Turkcan, A., Chakraborty, S., Sands, L. Using No-Show Modeling to Improve Clinic Performance. *Health Informatics Journal*, 16 (4), 246–259, 2010.

5. Zeng, B., Turkcan, A., Lin, J. and Lawley, M.A. Clinical Scheduling Models with Overbooking for Patients with Heterogeneous No-show Probabilities. *Annals of Operations Research*, 178 (1), 121-144, 2010.

6. Turkcan, A., Akturk, M.S. and Storer, R.H. Predictive/reactive Scheduling with Controllable Processing Times and Earliness/Tardiness Penalties. *IIE Transactions*, 41 (12), 1080-1095, 2009.

7. Lawley, M.A., Parmeshwaran, V., Richard, J.-P., Turkcan, A., Dalal, M.A., Ramcharan, D. A Time Space Scheduling Model for Optimizing Recurring Bulk Railcar Deliveries. *Transportation Research Part B: Methodological*, 42 (5), 438-454, 2008.

8. Turkcan, A., Akturk, M.S. and Storer, R.H. Due date and Cost-based FMS Loading, Scheduling and Tool Management. *International Journal of Production Research*, 45 (5), 1183-1213, 2007.

9. Akillioglu, H., Baydogan, M.G., Bolatli, Y., Canbaz, D., Halici, A., Sezgin, O., Ozdemirel, N.E., and Turkcan, A. A Pull-Based Milk-Run Distribution System Design for a Diesel Injector Producer. *Industrial Engineering Journal*, 17 (3), 2-15, 2006. (in Turkish)

10. Erhun, F., Akturk, M.S. and Turkcan, A. Interaction of Design and Operational Parameters in Periodic Review Kanban Systems. *International Journal of Production Research*, 41 (14), 3315-3338, 2003.

11. Turkcan, A., Akturk, M.S. and Storer, R.H. Nonidentical Parallel CNC Machine Scheduling. *International Journal of Production Research*, 41 (10), 2143-2168, 2003.

12. Turkcan, A. and Akturk, M.S. A Problem Space Genetic Algorithm in Multiobjective Optimization. *Journal of Intelligent Manufacturing*, 14 (3-4), 363 - 378, 2003.

13. Akturk, M.S. and Turkcan, A. Cellular Manufacturing System Design Using a Holonistic Approach. *International Journal of Production Research*, 38 (10), 2327-2347, 2000.

Book Chapter
1. Turkcan, A., Nuti, L., DeLaurentis, P.-C., Tian, Z., Daggy, J., Zhang, L., Lawley, M., Sands, L., No-show Modeling for Adult Ambulatory Clinics, B. Denton (Ed.) *Healthcare Operations Management: A Handbook of Methods and Applications*, Springer, 2013.

Technical Reports

1. Leonard, B., Turkcan, A., Simple sign-on solution post implementation physician and nurse utilization analysis, Technical report, June 2010.

2. Leonard, B., Turkcan, A., Boustany, K., Coyle-Rogers, P., Knotts, T., Hultgren, K., Improvement of clinical operations and organization in a nursing home, Technical report, October 2009.

3. Leonard, B., Coyle-Rogers, P., Turkcan, A., Hountz, D., Boustany, K., Improvement of patient flow in a community health clinic, Technical report, March 2009.

4. Turkcan, A., Lawley, M., Coyle-Rogers, P., Hancock, W., Lin, F., Hasan, I., Leonard, B., Analysis for renovation and expansion of existing facility versus construction of a new facility., Technical report, July 2008.

5. Turkcan, A., Lin, F., Leonard, B., Caldwell, B., Improvement of patient flow through the infusion clinic, Technical report, May 2008.

6. Turkcan, A., Lin, F., Hasan, I., Physician task time classification and documentation: Physicians' interaction with the current information technology system, Technical report, March 2008.

7. Turkcan, A., Machine scheduling with availability constraints, Technical report, 1999.

Proceedings

1. Turkcan, A., Akturk, M.S. and Storer, R.H., 2002. Reactive scheduling with controllable processing times. In Proceedings of 2nd International Conference on Responsive Manufacturing, Gaziantep, Turkey, 547-549.

2. Ilhan, T., Akturk, M.S. and Turkcan, A., 2002, Scheduling with Controllable Processing Times in a CNC Environment. In Proceedings of 2nd International Conference on Responsive Manufacturing, Gaziantep, Turkey, 91-92.

3. Turkcan, A. and Akturk, M.S., 2000. A Holonistic Approach to Cellular Manufacturing System Design Problem. In Proceedings of Group Technology/Cellular Manufacturing World Symposium, San Juan, Puerto Rico, 73-76.

SEMINARS

Invited Talks

1. Clinical scheduling in primary care and oncology clinics. Northeastern University, March 2010.

2. Clinical scheduling in primary care and oncology clinics. Purdue University, April 2009.

3. A time-space network flow model for train scheduling. Bilkent University, March 2007.

4. A time-space network flow model for train scheduling. Middle East Technical University, December 2006.

5. Predictive/reactive scheduling with controllable processing times in flexible manufacturing systems. Middle East Technical University, May 2003.

Conferences

1   Turkcan, A., Liang, B., 2012. Multi-criteria nurse assignment for chemotherapy patients in oncology clinics. INFORMS, Phoenix, AZ, USA.

2   Shashaani, S., Lawley, M., Turkcan, A., Wan, H., 2012. Uncertainty in chemotherapy patient scheduling. INFORMS, Phoenix, AZ, USA.

3. Turkcan, A., Liang, B., 2012. Patient classification and staffing in outpatient oncology clinics. Industrial and Systems Engineering Research Conference (ISERC), Orlando, FL, USA.

4   Lawley, M., Turkcan, A., Sands, L., Nuti, L., Tian, Z., Chang, K., Willis, D., Zhang, L., 2012. Impact of primary care no-show on hospital use for diabetics. Industrial and Systems Engineering Research Conference (ISERC), Orlando, FL, USA.

5. Turkcan, A., 2011. Chemotherapy nurse staffing and patient scheduling. INFORMS, Charlotte, NC, USA.

6. Benneyan, J., Jordan, V., Mutlu, S., Turkcan, A., 2011. Co-availability scheduling models to enable cancer surgical team coordination. INFORMS, Charlotte, NC, USA.

7. Turkcan, A., Shashaani, S., and Lawley, M.A., 2011. Chemotherapy patient scheduling and nurse assignment. INFORMS Healthcare, Montreal, Canada. (Invited)

8. Turkcan, A., Zeng, B., and Lawley, M.A., 2009. Chemotherapy operations planning and scheduling. INFORMS, San Diego, CA, USA. (Invited)

9. Lawley, M.A., Lin, J., Turkcan, A., Zeng, B., 2008. Clinical scheduling of patients with heterogeneous no-show probabilities. INFORMS, Washington, DC, USA. (Invited)

10. Lawley, M.A., Turkcan, A., Zeng, B., 2008. Patient assignment and scheduling in a physicians' network. IIE Annual Conference, Vancouver, Canada.

11. Turkcan, A., Muthuraman, K., Lawley, M.A., 2007. A priori performance of a myopic clinical scheduling policy. INFORMS, Seattle, Washington, USA. (Invited)

12. Turkcan, A., 2006. Bicriteria rescheduling with controllable processing times. INFORMS, Pittsburgh, Pennsylvania, USA.

13. Turkcan, A., Akturk, M.S. and Storer, R.H., 2004. Predictive/reactive scheduling with controllable processing times. INFORMS, Denver, Colorado, USA. (Invited)

14. Turkcan, A., Akturk, M.S. and Storer, R.H., 2003. Reactive scheduling with controllable processing times. EURO/INFORMS, Istanbul, Turkey. (Invited)

15. Turkcan, A., Akturk, M.S. and Storer, R.H., 2002. Parallel CNC Machine Scheduling with Controllable Processing Times. INFORMS, San Jose, California, USA.

16. Turkcan, A., Akturk, M.S. and Storer, R.H., 2002. Reactive scheduling with controllable processing times. 2nd International Conference on Responsive Manufacturing, Gaziantep, Turkey.

17. Ilhan, T., Akturk, M.S. and Turkcan, A., 2002. Scheduling with Controllable Processing Times in a CNC Environment. 2nd International Conference on Responsive Manufacturing, Gaziantep, Turkey.

18. Turkcan, A., Akturk, M.S. and Storer, R.H., 2001. A Problem Space Genetic Algorithm to Solve Bicriteria Scheduling and Tool Management Problems. INFORMS, Miami Beach, Florida, USA.

19. Turkcan, A., Akturk, M.S., 2001. A Problem Space Genetic Algorithm to Find the Pareto-optimal Set in a Bicriteria Scheduling Problem. Operations Research Industrial Engineering National Conference, Gazi University, Ankara, Turkey.

20. Ilhan, T., Turkcan, A. and Akturk, M.S., 2001. Minimization of the Tardiness, Earliness and Manufacturing Costs on a Single CNC Machine (in Turkish). Operations Research Industrial Engineering National Conference, Gazi University, Ankara, Turkey.

21. Turkcan, A. and Akturk, M.S., 2000. A Problem Space Genetic Algorithm to Bicriteria Scheduling in Flexible Manufacturing Cells. 15th International Conference on Multiple Criteria Decision Making, Ankara, Turkey.

22. Turkcan, A. and Akturk, M.S., 2000. A Holonistic Approach to Cellular Manufacturing System Design Problem. Group Technology/Cellular Manufacturing World Symposium, San Juan, Puerto Rico.

Mentoring

Ph.D. Dissertations

◇ Bohui Liang, Chemotherapy scheduling and nurse assignment, Northeastern University, Expected 2015.

◇ Onur Arslan, Cancer care delivery, Northeastern University, Expected 2015.

◇ Serpil Mutlu, Team scheduling, Northeastern University, Expected 2014 (co-supervising with Prof. Jim Benneyan).

Masters theses/projects

◇ Ceyhan Erdem Esin, Assembly line balancing with multi-manned tasks, Middle East Technical University, 2006–2007 (co-supervised with Prof. Omer Kirca).

◇ Sara Shashaani, Chemotherapy patient scheduling and uncertainty, Purdue University, 2009–2011 (co-supervised with Prof. Mark Lawley and Prof. Hong Wan).

◇ Bohui Liang, Simulation of patient flow in a primary care clinic, Northeastern University, Spring 2011.

Purdue University Technical Assistance Program (TAP) projects

◇ Supervised three Purdue IE graduate students who worked on production, logistics and quality problems to assist Indiana companies.

Senior design projects

◇ Supervised five senior design project groups (25 students) who worked on real problems about scheduling, transportation, logistics and distribution in several manufacturing and distribution facilities in Turkey.

⋄ Supervised a senior design project group (4 students) who worked on simulation of clinic operations in an outpatient clinic in Indiana.

COURSES TAUGHT

Northeastern University, 2010-2012
Simulation Analysis (graduate)
Digital Simulation Techniques (undergraduate)
Constraint Programming (graduate)
Healthcare Systems Engineering (undergraduate/graduate)

Purdue University, Fall 2009
Systems Simulation (graduate)

Middle East Technical University, 2005-2007
Engineering Statistics I (undergraduate)
Production and Service Operations Planning I (undergraduate)
Topics in Production Management (undergraduate)
Systems Design I - II (undergraduate senior design project)
Topics in Modern Manufacturing (graduate)
Constraint Programming (graduate)

Bilkent University, Summer 2005
Introduction to Statistics (undergraduate)

PROFESSIONAL MEMBERSHIP AND SERVICE ACTIVITIES

Member
Institute of Operations Research and Management Science (INFORMS)

Conference organizer
Healthcare Systems Engineering Track Co-chair, Industrial and Systems Engineering Research Conference (ISERC), 2012

Panelist/Reviewer
The Scientific and Research Council of Turkey (TUBITAK) (2005–2007)

Referee
Asia-Pacific Journal of Operational Research, Computational Optimization and Applications, Computers and Industrial Engineering, European Journal of Operational Research, Health Systems, IEEE Transactions on Automation Science and Engineering, IIE Transactions, IIE Transactions on Healthcare Systems Engineering, International Journal of Production Economics, Production and Operations Management, Industrial Engineering Journal (Turkish), Transactions on Operational Research (Turkish)

MAY 8, 2013