

# Bahar Biller

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## Current position

Assistant Professor in the Operations Management and Manufacturing Group of Graduate School of Industrial Administration at Carnegie Mellon University.

## Research Interests

- Computer simulation of stochastic systems.
- Statistics, especially time series modeling.
- Risk modeling.
- Specific applications include production systems, supply chain, telecommunications, and financial modeling.

## Education

1998 – 2002 Northwestern University Evanston, Illinois

### Ph.D. in Industrial Engineering and Management Sciences

Thesis: “A comprehensive input-modeling framework and software for stochastic discrete-event simulation experiments.”

1996 - 1998 Bilkent University Ankara, Turkey

### Master of Science in Industrial Engineering

Thesis: “On the distribution of throughput of transfer lines.”

1992 - 1996 Bilkent University Ankara, Turkey

### Bachelor of Science in Industrial Engineering

Senior Project: “Determination of an optimal raw material stocking policy in a pre-fabric construction company.”

## Professional experience

Summer 1999 General Motors R&D Center Warren, Michigan  
**Intern**

- Developed simulation of an automotive production system in a build-to-order environment to test strategies to align supply and demand through a combination of backlogging, price changes, and inventory buffers.

Summer 1995 Turk Tractor Company Ankara, Turkey  
**Intern**

- Developed capacity plan for the production of a new tractor model.

Summer 1994 Erdemir Steel Corporation Eregli, Turkey  
**Intern**

- Forecasted sales volumes and analyzed capacity requirements.

**Teaching experience** Carnegie Mellon University Pittsburgh, Pennsylvania  
**Professor**

- Course MBA 45839: *Simulation Modeling for Production*.

Northwestern University Evanston, Illinois  
**Instructor**

- Course IEMS 315: *Stochastic Modeling and Simulation*.

Northwestern University Evanston, Illinois  
**Teaching Assistant**

- Courses: *Statistics and Data Analysis, Stochastic Modeling and Simulation*.

Bilkent University Ankara, Turkey Cincinnati Milacron  
**Teaching Assistant**

- Courses: *Quality Assurance and Reliability, Production Systems Design*.

## **Publications**

Biller, B. and B. L. Nelson (2002). "Modeling and generating multivariate time series with arbitrary marginals using a vector autoregressive technique." Forthcoming, *ACM Transactions on Modeling and Computer Simulation*.

Biller, B. and B. L. Nelson (2002). "Fitting time-series input processes for simulation." To be submitted to *Operations Research*.

Biller, B. and B. L. Nelson (2002). "Parameter estimation for ARTA processes." *Proceedings of the 2002 Winter Simulation Conference*. Piscataway, New Jersey: Institute of Electrical and Electronics Engineers.

Biller, B. and B. L. Nelson (2002). "Tutorial: Answers to the top ten input modeling questions." *Proceedings of the 2002 Winter Simulation Conference*. Piscataway, New Jersey: Institute of Electrical and Electronics Engineers.

Deler, B. and B. L. Nelson (2001). "Modeling and generating multivariate time series with arbitrary marginals and autocorrelation structures." *Proceedings of the 2001 Winter Simulation Conference*. Piscataway, New Jersey: Institute of Electrical and Electronics Engineers.

Biller, B. and B. L. Nelson (2002). "On the performance of the ARTA fitting algorithm for stochastic simulation." In preparation.

Biller, B. and B. L. Nelson (2002). "A vector autoregressive framework for time series input processes: Software and applications." Work in progress.

Dincer, C. and B. Deler (2000). "On the distribution of throughput of transfer lines." *Journal of the Operational Research Society*. Volume 51, No. 10, pp. 1170 - 1178.

Deler, B. and B. Tansel (1998). "On the flow-path design formulation for automated guided vehicle systems." Technical Report IEOR - 9802. Industrial Engineering Department, Bilkent University.

Deler, B. and C. Dincer (1997). "Transient analysis of serial line production systems: A literature review." Technical Report IEOR - 9712. Industrial Engineering Department, Bilkent University.

## **Presentations**

Billar, B. \* and B. L. Nelson (2002). "Parameter estimation for ARTA processes." To be presented at Winter Simulation Conference, San Diego, CA.

Billar, B. \* and B. L. Nelson\* (2002). "Tutorial: Answers to the top ten input modeling questions." To be presented at Winter Simulation Conference, San Diego, CA.

Deler, B. \* and B. L. Nelson (12/01). "Modeling and generating multivariate time series with arbitrary marginals and autocorrelation structures." Winter Simulation Conference, Arlington, VA.

Deler, B. \* and B. L. Nelson (11/01). "Improving simulation input models through VARTA." INFORMS Conference, Miami Beach, FL.

Deler, B. \* and B. L. Nelson (7/01). "Towards a comprehensive stochastic input-modeling framework for continuous distributions." INFORMS Applied Probability Society Conference, New York, NY.

Deler, B. \* and B. L. Nelson (11/00). "Vector autoregressive to anything input processes for simulation." INFORMS Conference, San Antonio, TX.

Deler, B. \* and C. Dincer (7/98). "On the distribution of throughput of transfer lines." INFORMS International Conference, Tel Aviv, Israel.

Deler, B. \* and C. Dincer (6/98). "On the performance of transfer lines." 20<sup>th</sup> National Congress of Operations Research and Industrial Engineering, Ankara, Turkey.

Dincer, C. \* and B. Deler (5/97). "On the variance of three-stage two-buffer transfer lines." INFORMS Conference, San Diego, CA.

## **Development Programs**

7/29/01 - 8/01/01      Xerox Document University      Leesburg, Virginia  
**Participant, NSF-sponsored Engineering Education Scholars Workshop**

- Attended professional development sessions providing strategies to improve teaching and increase acquaintance with the grant-writing process.

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\* Indicates presenter.

9/00 - 6/01 Northwestern University Evanston, Illinois

**Participant, *Preparing Future Faculty Program***

- Attended monthly seminar series to develop teaching competence, to get acquainted with new developments in pedagogy, and to increase familiarity with faculty responsibilities and academic governance.

9/98 - 6/99 Northwestern University Evanston, Illinois

**Participant, *Teaching Assistant Fellow Program***

- Studied teaching methodologies at Searle Center for Teaching Excellence.

**Awards & Honors**

- Recipient of Carnegie Bosch Institute Faculty Development Grant (10/02 - 10/04).
- Supported by NSF research grant, DMI 9821011 (6/98 - 10/01)
- Recipient of Sigma Xi research grant (5/01).
- Recipient of graduate scholarship, Bilkent University (9/96 - 6/98).
- Recipient of undergraduate scholarship, Bilkent University (9/92 - 6/96).

**Professional Memberships**

- Institute for Operations Research and the Management Sciences
- Institute of Industrial Engineers
- American Statistical Association
- Society of Women Engineers
- Women in OR/MS

**Professional Activities & Service**

- Speaker at INFORMS 2002 Doctoral Colloquium (11/02).
- President of Northwestern's INFORMS student chapter (9/00 – 9/01).
- Facilitator, “Research primer seminar for first-year IE graduate students” (9/00 - 8/01).
- Referee for Winter Simulation Conference 2001 and the journal *Communications in Statistics*.