

# MURAT FADILÖĖLU

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## DEGREES

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- **Associate Professorship** conferred by YOK (the Council of Higher Education of Turkey), April 2009.
- **Ph.D.** in Industrial and Systems Engineering, University of Florida, Gainesville, Florida August 1998.
- **M.E.** in Industrial and Systems Engineering with concentration in Operations Research, University of Florida, Gainesville, Florida, August 1995.
- **B.S.** in Electrical Engineering with concentration in Telecommunications and Control, Bilkent University, Ankara, Turkey, June 1993.

## RESEARCH

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- **Research Interests**

Supply Chain Management, Performance Evaluation of Inventory/Production Systems, Queueing Models, Stochastic Modeling, Stochastic Processes, Stochastic Calculus and its Applications in Finance, Dynamic Programming and Optimal Control, Telecommunications, Industrial Automation, Microcontrollers, Internet Applications.

- **Current Research**

Currently involved in research in the area of supply chain management and stochastic modeling of manufacturing and inventory systems. Investigated the nature of the optimal ordering policy for a retailer when different suppliers with different characteristics (price, yield) are available. Proposed a new approach to the classical buffer allocation problem for tandem lines using a new line balance idea. Proposed a new analysis methodology for stochastic inventory systems under rationing policy and a new rationing policy that uses the time-to-arrival information of outstanding orders. Characterized and analyzed a new random walk (the circular random walk) in the Euclidean plane. Characterized the optimal policy for a make-to-stock system with multiple demand classes and parallel servers.

- **Dissertation and Related Research, 1995 –2000**

Developed a general theory on the spectral properties of Quasi-Birth-Death Processes and showed its implications to the probabilistic analysis of serial manufacturing systems. This framework led to new insights about the probabilistic behavior of production systems and to a new concept of balance for production lines.

- **Research Assistant** in Center for Intelligent Machines and Robotics in the Mechanical Engineering Department at University of Florida, May 1996 - December 1997:

Contributed to the research group for the development of autonomously navigating vehicles funded by the United States Air Force. Tested CAN (Controller Area Network) and DN (Device Net) protocols to be used for the communication between the motion

planner and the actuators for steering, throttle, and brake control. Wrote system-level and application-level C code for the Device Net Scanner working under Lynx real-time operating system.

## TEACHING

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- **Associate Professor** at Izmir University of Economics, 2010-2012
  - MATH 240 *Probability for Engineers*, undergraduate. (two semesters)
  - MATH 234 *Engineering Statistics*, undergraduate. (two semesters)
  - ISE 305 *Optimization III- Stochastic Models*, undergraduate. (two semesters)
  - IES 508 *System Simulation and Modeling*, graduate. (two semesters)
  - IES 512 *Manufacturing Systems Analysis*, graduate. (two semesters)

- **Assistant Professor** at Bilkent University, 1999-2010

Instructed the following courses:

- IE 271 *Operations Analysis and Design*, undergraduate.
  - IE 324 *Simulation*, undergraduate. (six semesters)
  - IE 325 *Stochastic Models*, undergraduate. (ten semesters)
  - IE 375 *Quality Assurance and Reliability*, undergraduate. (four semesters)
  - IE 421 *Introduction to Stochastic Processes*, senior elective. (two semesters)
  - IE 523 *Probabilistic Analysis*, graduate. (four semesters)
  - IE 528 *Dynamic Programming*, graduate.
  - MATH 250 *Introduction to Probability*, undergraduate.
  - MATH 520 *Applied Linear Algebra*, graduate. (two semesters)
- **Instructor** for “Matrix Methods in Systems Engineering” course offered at the University of Florida, 1998.
  - **Lecturer** in “Integrated Process and Product Development” course at the University of Florida on the topic of CAN (Controller Area Network) and embedded control, 1998.
  - **Lecturer** in “Workshop on Embedded Control” taught at the Department of Agricultural and Biological Engineering, University of Florida, 1998.

## ACADEMIC SERVICES

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- Acted as the **Chair** of the Department of Industrial Systems Engineering in Izmir University of Economics. (February-May 2012)
- Supervised seven master’s students and a Ph.D. student, currently supervising a master’s student.
- Supervised for six semesters GE 401-402 “Innovative Product Design and Development”, a two semester course sequence in which students design and develop new innovative products as part of interdisciplinary teams.

- Served as supervisor of computer systems in the Department of Industrial Engineering for five years which involves determination of the computer and other technological equipment needs of the department, formulation of the departmental policy for their acquirement and maintenance of the computer systems with the help of a graduate assistant.
- Developed the Industrial Engineering Curriculum with the Curriculum Development Work Group in the Department of Industrial Engineering.
- Refereeing for *IIE Transactions*, *IEEE Transactions on Automatic Control*, *IEEE Transactions on Automation Science and Engineering*, *Journal of Operational Research Society (JORS)*, *OR Spectrum*, *European Journal of Operational Research*, *Operations Research*, *Yöneylem Araştırması Dergisi*, *Endüstri Mühendisliği Dergisi*.
- Reviewed five projects for research and development assistance from TIDEB/Tübitak.
- Supervised the industrial senior projects of nine groups at Turk Tuborg, Efes Biracilik, Tepe Home, Unilever (Besan), Knauf, Arcelik, Calrsberg, Proctor and Gamble, and Guven Hastanesi.
- Supervised seven senior students under “Introduction to Research in IE and OR” course.
- Performed undergraduate student advising for approximately 60 students during the last nine years.
- Served as a committee member in 10 master’s thesis in the departments of industrial engineering in Bilkent and METU.
- Served as a member of the Ph.D. Qualifier Examination Committee in the years 2001, 2002, 2003.
- Served as a jury member in the student case competition, TIMES, organized by the Operations Research Club of Bilkent University, in the years 2000 and 2002.

## **JOURNAL PUBLICATIONS**

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- “Production Control and Stock Rationing for a Make-to-Stock System with Parallel Production Channels” with Onder Bulut, in *IIE Transactions*, vol 43, pp. 432-450, 2011.
- “An Embedded Markov Chain Approach to Stock Rationing” with Onder Bulut, in *Operations Research Letters*, vol 38, pp. 510-515, 2010.
- “A Model and Case Study for Efficient Shelf Usage and Assortment Analysis” with Oya Ekin Karasan and Mustafa C Pinar, in *Annals of Operations Research*, vol 180, pp. 105-124, 2010.
- “A Dynamic Rationing Policy for Continuous-Review Inventory Systems,” with O. Bulut, in *European Journal of Operational Research*, Vol. 202, pp. 675-685, 2010.

- “Supplier Diversification under Binomial Yield,” with E. Berk, M.C. Gurbuz, in *Operations Research Letters*, Vol. 36, pp. 539-542, 2008.
- “Variance Reduction Techniques: Experimental Comparison and Analysis for Single Systems,” with I. Sabuncuoglu, S. Celik, in *IIE Transactions*, Vol. 40, pp. 538-551, 2008.
- “An EOQ Model with Multiple Suppliers and Random Capacity”, A.S. Erdem, S. Ozekici, in *Naval Research Logistics (NRL)*, Vol. 53, pp.101-114, 2006.
- “Models of Production Lines as Quasi-Birth-Death Processes” with S. Yeralan, in *Mathematical and Computer Modeling*, Vol. 35, 913-930, 2002.
- “A General Theory on Spectral Properties of State-Homogeneous Quasi-Birth-Death Processes” with S. Yeralan, in *European Journal of Operational Research*, Vol. 128, pp. 402-417, 2001.

## **WORKING PAPERS**

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- “An Embedded Markov Chain Approach to Stock Rationing with Batch Orders,” with O. Bulut, under review at *International Journal of Production Economics*, 2011.
- “Optimal Margins and Price Limits for Futures Contracts,” with P. Altay, A. Salih, M.C. Pinar, under review at *Journal of Global Optimization*, 2011.

## **PROCEEDINGS AND OTHER PUBLICATIONS**

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- “A Genetic Algorithm for the Economic Lot Scheduling Problem under Extended Basic Period Approach and Power-of-Two Policy,” with M.F. Tasgetiren and O. Bulut in *Advanced Intelligent Computing Theories And Applications. With Aspects Of Artificial Intelligence*, Lecture Notes in Computer Science, 2012, Volume 6839/2012, pp. 57-65, 2012.
- “A discrete artificial bee colony algorithm for the economic lot scheduling problem,” with M.F. Tasgetiren and O. Bulut in *Proceedings of 2011 IEEE Congress on Evolutionary Computation*, New Orleans, USA, 5-8 June 2011.
- “Continuous Time Control of Make-to-Stock Production Systems,” in *Proceedings of VIII. Conference on Stochastic Models of Manufacturing and Service Operations*, Kusadasi, Turkey, May 28-June 2 2011.
- Benzetimde Geçerleme ve Doğrulama (Validation and Verification in Simulation), in *Türkiye Bilişim Ansiklopedisi* (Informatics Encyclopedia of Turkey), 2006.
- “Responding to Yield Uncertainty by Diversification,” with E. Berk, M.C. Gurbuz in *Proceedings of Second International Conference on Responsive Manufacturing*, 634-637, Gaziantep, Turkey, 26-28 June 2002.
- "On Properties of Markovian Models of Production Lines," with S. Yeralan, in *Proceedings of the Second Aegean International Conference on Analysis and Modelling of Manufacturing Systems*, Tinos Island, Greece, pp. 273-285, 16-20 May 1999.

- “The Intelligent Control of Production Lines – A Framework for Experimentation” with S. Yeralan and G. P. Cengiz in *Proceedings of the International Workshop on Performance Evaluation and Optimization of Production Lines*, pp. 281-291, 1997.
- “The Impact of Intelligent Machine Tools on Production Operations Management and Control” with S. Yeralan, B. Tan, G. Norton in *Proceedings of the 1995 NSF Grantee’s Conference*, pp. 301-302, 1995.

## **PRESENTATIONS AT CONFERENCES**

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- “Continuous Time Control of Make-to-Stock Production Systems,” VIII. Conference on Stochastic Models of Manufacturing and Service Operations, Kusadasi, Turkey, May 28-June 2 2011.
- “Control of an M/M/s Make-to-Stock Queue with Multiple Customer Classes and Lost Sales,” 24th IFIP TC7 Conference on System Modelling and Optimization, Buenos Aires, Argentina, July 27-31 2009.
- “Control of an M/M/s Make-to-Stock Queue with Multiple Customer Classes and Lost Sales,” MSOM 2009, Boston, MD, USA, June 29-30 2009.
- “Çembersel Rassal Yürüyüş,” YAEM 2009, Ankara, Turkey, June 22-24 2009.
- “Supplier Diversification under Binomial Yield,” MSOM 2008, Maryland, MD, USA, June 5-6 2008.
- “An Embedded Markov Chain Approach to the Analysis of Inventory Systems under Rationing,” Meeting of the Euro Working Group on Stochastic Modeling, Istanbul, Turkey, June 23-25 2008.
- “Analysis of Inventory Systems with Backordering under Rationing: An Embedded Markov Chain Approach,” EURO XXII, Prague, Czech Republic, July 8-11 2007.
- “Yoksatmalı Envanter Sistemlerinin Tayınlama Altında Çözümlemesi: Bir Gömülü Markov Zinciri Yaklaşımı,” YAEM 2007, Izmir, Turkey, July 2-4 2007.
- “An Embedded Markov Chain Approach to the Analysis of Inventory Systems under Rationing,” INFORMS 2006, Pittsburgh, PA, USA, November 5-8 2006.
- “An Embedded Markov Chain Approach to the Analysis of Inventory Systems with Backordering under Rationing,” MSOM Conference, Atlanta, GA, USA, June 19-20 2006.
- “Supplier Diversification Under Random Delivery Capacities,” MSOM Conference, Evanston, Illinois, USA, June 27-28 2005.
- “Supplier Diversification Under Random Delivery Capacities,” MSOM Conference, Eindhoven, Holland, July 1-2 2004.

- “A New Approach to Buffer Allocation in Production Lines: The Line Balancing Algorithm,” Euro/Informs Joint International Meeting, Istanbul, Turkey, July 6-10 2003.
- “To Diversify or not to Diversify: Hedging Under Yield Uncertainty,” INFORMS Annual Meeting, San Jose, California, USA, Nov. 17-20 2002.
- “Responding to Yield Uncertainty by Diversification,” Second International Conference on Responsive Manufacturing, Gaziantep, Turkey, 26-28 June 2002.
- “Spectral Analysis of Models of Production Lines,” Euro XVII 17<sup>th</sup> European Conference on Operational Research, Budapest, Hungary, July 16-19 2000.
- “Üretim Dizgesi Markov Modellerinin Özellikleri,” YAEM 2000, Magosa, Cyprus, June 10-13 2000.
- "On Properties of Markovian Models of Production Lines," Second Aegean International Conference on Analysis and Modelling of Manufacturing Systems, Tinos Island, Greece, 16-20 May 1999.

## **SKILLS**

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- Operating Systems: Unix, Linux, Windows, and Lynx Real-Time Operating System (as an administrator and a developer).
- Programming Languages: Assembly, C, C++, Java, Pascal, and Html.
- Analysis Platforms: Matlab, Maple, Arena.
- Low-level programming: IBM PC Architecture around Intel X86 processors, Microcontroller Platforms based on 8051 family.
- Languages: Excellent command in English, French and Turkish, fluency in Spanish.

## **INTERESTS**

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Literature, History, World Cuisines, World Music, Scuba Diving, Squash.