Curriculum Vitae

NEJAT OLGAC

Professor, Department of Mechanical Engineering
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Date of Birth: 8/28/1950

Education:

1976 Dr. Eng. Sci. Columbia University, NYC, USA
Mechanical Engineering GPA: 4.0 /4.0 Cum Laude.
Thesis : "Stochastic Optimal Control Problems Related to Artificial River Aeration Systems" , Advisor : Richard W. Longman.

1972 M.S. - B.S. Technical University of Istanbul, Turkey,
Mechanical Engineering GPA: 18.3/20, Summa Cum Laude.

Professional Experience:

Academic

9/2017-8/2018 **Visiting Professor, Czech Technical Univ.**, Prague

9/2013-16 **Chairman, Systems and Mechanics Group**, Dept. of Mechanical Engineering, directing the strategic decisions with the 14-faculty-member (tenured or tenure-track).

9/12-pres **Professor**, Joint appointment, Department. of Mathematics, Univ. of Connecticut, Storrs.

9/95-pres **Professor**, Department. of Mechanical Engineering, Univ. of Connecticut, Storrs.

9/02-1//03 **Visiting Professor**, **Harvard University**

9/95-8/96 **SEW-Eurodrive Guest Professor**, **Technical University of Munich**, Germany.

9/88-8/95 **Associate Professor**, Department. of Mechanical Engineering, Univ. of Connecticut, Storrs.

4/89-6/89 **DAAD (German Academic Exchange Assoc.) Visiting Scholar**, Technical Univ. of Munich, Germany.

9/88-4/89 **Guest Professor**, **INRIA, French Research Institute on Computer Science and Automation,** Sophia Antipolis, France..

9/81-9/88 **Assistant Prof**., Department of Mechanical Engineering University of Connecticut, Storrs.

Industrial

9/78-8/81 **COO and Member of the Board of Directors and Asst. Gn. Mgr., Elektroakustik, S.A.,** within the Transturk Holding Group, Istanbul, Turkey. Manufacturer of color TVs, audio-visual equipment under German Telefunken License. Overseeing manufacturing, product portfolio, marketing and personnel matters of an operation with **over 350 employees**.

1977-78 **Industrial Projects Director**. Transturk Group, Istanbul, Turkey. Responsible for new investment projects. Personally managed a **$ 500,000 World Bank credit** for a flask-less casting facility to produce machine tool beds, in Bunyan, Anatolia. Manufacturing of enamel heating units wood stoves and accessories.

1976-77 R&D Project Engineer, Arcelik S.A., Istanbul, Turkey. Household appliances manufacturer. Responsibilities: Mechanical design improvements of refrigerators, washing machines, vacuum cleaners. Project manager to support the local production of hermetic compressors.

Training

1973-76 New York Institute of Technology, Adjunct Assistant Professor. Courses taught: Heat transfer, engineering materials, engineering graphics, applied thermodynamics, engineering mechanics.

1973 Uniroyal Inc., Chicopee, MA. Summer aid, technical. Tire manufacturing problems.

1970 Intern. DeKlop Shipbuilding and Repairing Co., Sliedrecht, Holland. General shipyard manufacturing operations.

1969 Maintenance and Rebuilding Service, Turkish Post Office, Ankara, Turkey. Trainee. On internal combustion engines rebuilding.

Courses taught: Advances in Control Systems Design (3rd Grad course in controls, 50% covers my own discoveries on Time-Delayed Systems) and Theory and Design of Automatic Control Systems (second Grad course), **Linear Systems Theory** (I introduced this course to the curriculum, and it is now an obligatory course), Introduction to Engineering, Dynamics of Mechanical Systems (Junior level Vibration course), Elements of Machine Design (Senior level), Senior Design Project (Capstone course is industrially sponsored), Measurement Techniques (laboratory course), Design and Control in Robotics (first course in sequence).

Scholarly Interests :

Create a scientific footprint, specifically in the **Time-Delayed Systems** area. My group's unique mathematical paradigm which is called the **Cluster Treatment of Characteristic Roots (CTCR)** has already been widely adopted by the systems community (since 2006)**.** Vast range of applications of CTCR is progressing. They include

- Delay Scheduling Control (DS)
- Sign Inverting Control (SIC)
- Active vibration suppression (**Delayed Resonator** concept of tuning – 3 patents- 1995-1996-1999),
- Simultaneous Machining Chatter analysis –and optimization (1 patent-2011)
- New paradigm in combustor design and control method against Thermo-acoustic Instability

Other research topics:

- Non-collocated and resonance-based vibration absorption
- active and passive vibration control,
- nonlinear dynamics and control,
- digital and analog control applications for manufacturing systems,
- analysis and synthesis of automatic control systems,
- applications to robotics problems,
- machine design and automation,
- micro-nano scale manipulation tasks in biomedical applications.

Two on-going book projects: One on Time-Delayed System with Applications, and the other an undergraduate text book in novel frequency domain approaches in Mechanical Vibrations.

Extensive industrial consulting on general engineering projects (companies include **Pratt and Whitney, Otis Elevators, Sikorsky, General Electric, Rogers Corp., Stanley Tools, Pall Corp**.). See list below.

Some of this consulting work was later converted into 2 workshops (1985-90) on some specific topics or short courses at UCONN for continuing education credits. They were both attended by 35-40 engineers and with participation of collaborating industrial automation companies:

"**Automation in Manufacturing Workshop**", Advances in computerized manufacturing. Hands-on work on programmable controllers.

"**Optimality in Manufacturing Workshop",** Scheduling – sequencing and job planning (with Prof. Luh)

Honors and Awards:

2019 **Doctor Honoris Causa, Czech Technical University**, Prague

2017-18 **Visiting Professor, Czech Technical University-CVUT Prague**

2016 **IEEE-CSS Tran. on Automatic Control Outstanding Reviewer**,

2015 **UCONN Research Excellence Award.**

2015 **Distinguished Engineer of the Year**, ASME Hartford Chapter, CT.

2015 **Graduate Student Competition Award** (third place, for Umut Zalluhoglu's work on Thermoacoustic Instability)

2013 **General Chair** , DSCC 2013, ASME Dynamic Systems and Control Conference, Stanford University, Palo Alto, CA. This was the largest DSCC to date (440 total attendees from 24 countries).

2013 "**Conference Best Paper Award, Theory**", ASME DSCC 2013, Palo Alto, CA. (Joint work of Q. Gao and U. Zalluhoglu on Spectral Delay Space vs. Delay Space)

2012 **General Chair** – 10th IFAC Workshop on Time Delay Systems June 22-24, 2012, Boston, MA

2012 "Best Student Paper Award Finalist", ASME DSCC 2012, Ft. Lauderdale, FL. (Q. Gao and U. Zalluhoglu, on Spectral Delay Space)

2008 **Research Excellence Award, Mechanical Engineering, UCONN**

2007	**CASE Member,** Connecticut Academy of Science and Engineering
2007	**Best Presentation of Session**, at ACC07, ThB03 Sensing and Measurement Applications (Ali F. Ergenc's work on monitoring micro-pipette motion)
2006	**Best Presentation of Session**, at ACC06, ThA10 Linear Time Delay Systems (R. Sipahi's work on the new stability analysis procedure for time delayed systems)
2006	**Best Presentation of Session**, at ACC06, ThA09 Stability and Optimal Control (H. Fazelinia and R. Sipahi's work on "Building Block" concept)
2004	**Senior Member, IEEE** (Institute of Electrical and Electronics Eng.).
2004	**Best Presentation of Session**, at ACC04, FrP08-Time Delay Systems (R. Sipahi's work)
2002	**Best Student Paper Award, ASME-DSCD**, at IMECE 2002 (on Mr. R. Sipahi's work).
2002	Marquis Who's Who in America
1999	**Mechanical Engineering Outstanding Faculty, UCONN**
1999	**Olin Faculty Fellow**, UCONN
1997	**Fellow, ASME** (American Society of Mechanical Engineers).
1997	Who is Who in Turkey, Profesyonel Ltd., 3rd Ed., 1997
1995	**SEW-Eurodrive Guest Professor**, Technical University of Munich, Germany.
1994	**CNN Science and Technology Week** appearance / DR Active Vibration Absorber
1993	NASA / Connecticut Space Grant Faculty Fellowship.
1982	**NSF Research Initiation Award**
1993	**UCONN Provost's Economic Development Research Award**
1989	**DAAD (German Academic Exchange Assoc.) Visiting Scholar**.
1988	**"Professeur Invite", INRIA/French Foreign Relations Ministry**.
1972-74	Graduate Research Assistantship, Columbia University.
1974-76	U.S. Department of the Interiors fellowship.
1972	Doctoral Fellowship, Ford Foundation.
1967-72	Scholarship, National Science Association, Turkey.
1972	First, among a graduating class (Technical University of Istanbul) with 18.3/20 GPA (**Summa Cum Laude** with highest honors).
1961-67	Honor roll throughout the high school education, Pendik Highschool, Turkey, **Valedictorian** of the class of 1967.

Language skills *:*

Mother tongue	:	**Turkish**
Comfortably fluent (reading, writing and speaking)	:	**French, German, Italian**

Research Grants and Projects: *(Single PI unless noted otherwise)*

"EAGER: Prediction and Control of Thermo-acoustic Instability", **National Science Foundation-CMMI,** $151,300 (2015-2018).

"Proof-of-Concept Experiment on an Unconventional Mathematical Perspective for Gas Turbine Blade-casing Rub Dynamics" $15,000, UCONN Research Excellence Program (2015-16).

"Control of Autonomous Hybrid Projectiles and Relevant Instrumentation", **ARDEC/University of Hartford**, (with co-PI Prof. Gao), $200,000 , (2011-2014).

"Prediction of Thermo-Acoustic Instability (TAI) in Combustion, A Paradigm Shift", **UCONN Research Foundation**, $ 20,000, (1/2013 - 4/2014).

"Fully Automated Micro-injection Procedures for ICSI", **NIH**, jointly with Harvard Medical School and UC Davis, UCONN's share $ 347,000, (2008-2013).

"Control of Autonomous Hybrid Projectiles and Relevant Instrumentation", **ARDEC/University of Hartford**, $65,000 Phase I, (2011-2013).

"Dynamic Simulation of Rotor Case Rub Interaction", **Pratt and Whitney**, $125,000 total ($ 25,000 UCONN match incl.), (1-12/2012).

"The development of control for hybrid projectiles", **ARDEC/ University of Hartford**, $40,000, (6/1-12/31/2010)

"Advanced Embedded Sensors and Control for Transportation Infrastructure Monitoring and Management" **Department of Homeland Security,** DHS 2008-ST-061-TS0002, $ 10,000, (2009)

"Exploring New Concepts in Fluidics and Cellular Mechanics for Controlled Microinjection", **National Science Foundation**, Co-PI, (with T. Fan as the PI), $200,000, (2008-2011).

"Swarm Behavior During Conflicts: From Biological to Engineered Systems", **US Army Research Office (ARO)**, $ 271,000 (Aug. 2007- July 2011).

IREE (International Research in Education and Engineering) award "European Partnership for Novel Framework for Optimizing Non-Uniform Pitch Milling", **National Science Foundation,** $ 14,500, (10/2006-05/2009)

"Novel Framework for Optimizing Non-Uniform Pitch Milling", **National Science Foundation,** $ 266,000, (6/05-6/09).

"Productivity Improvements for Rough Milling of Blade Slots on Titanium Disks" **Pratt and Whitney**, $ 52,000, (1/2006-12/2007)

Research Experience for Undergraduates (REU) **National Science Foundation,** supplements to "Novel Framework for Optimizing Non-Uniform Pitch Milling", $ 7,500, (6/05-6/08).

"A Novel Microinjection Process Using Rotational Oscillations", **NIH**, (jointly with Harvard Medical School and UC Davis), (UCONN's share $ 204,500), 9/04-9/08.

"A New Paradigm for Intelligently Managing the Time Delay", **DoE, MICS** (Math. Information and Computer Systems), ($ 126,000), 8/04-9/07.

Research Experience for Undergraduates (REU) **National Science Foundation,** supplements to ($6,000), "An Innovative Framework on the Stability of Dynamics with Multiple Time Delays", 2/05-10/05.

"An Innovative Framework on the Stability of Dynamics with Multiple Time Delays", **National Science Foundation**, ($ 35,000), 7/04-6/05.

"Semi-active re-tuning against vibration and shock transmissibility on Portable Fuel Cells" , **US Army** Phase I award ($ 76,000), 6/02-6/03. Phase II award ($40,000), 2/03-2/04.

“An electro-mechanical system for remote actuation of electrical circuit breakers”, **General Electric**, ($140,000), with K. Kazerounian, 2/02-6/03.

“Modeling and Dynamic Analysis of Micromanipulators Used in Transgenics and Biomedical Applications”, **UConn Research Foundation** 1/ 01-12/ 02, $ 12,000.

"A New Vibration Cancellation Mechanism Using Smart Materials", **CII** Connecticut Innovations Inc. ($156,000), **Sikorsky Aircraft** ($ 10,000 cash + $ 110,000 in-kind), 6/2000-1/2003.

“A **NASA EPSCoR** Preparation Grant Proposal to Stimulate Competitive Aerospace Research in Connecticut,” (with 41 other co-investigators), NASA, June 1, 1999 – May 31, 2001, $450,000.

"Design and Control Technique for Microscopic Manipulations", Research Initiatives of **UConn School of Engineering**. 1-12/2000., $ 29,400.

“Loose Roll Winder,” (with Z. Bzymek), **Rogers Corporation**, 8/99 – 5/2000, $5,000.

"Measurement Techniques Laboratory Development", Teaching Initiative of **UConn School of Engineering**. 1-6/2000, $ 40,000.

"Helicopter Vibration Cancellation Systems", **Sikorsky Helicopters**, 9/1999-6/2000, $ 5,000.

“Reciprocating Ram Extruder and Pelletizer” (1998-99), **Rogers Corp.** , $ 9,000.

“Constant Paper Tension Device for high-speed transmission”, (1998-99), **Gerber Technology.** , 5,000.

“Tunable Torsional Vibration Absorber: the Centrifugal Delayed Resonator”, **UConn Research Foundation**, (6/1996-12/31/1998), $ 5,000+ $ 1000 supplement.

"Semi-Active Vibration Control Using Smart Structures", Preparatory funding, **NASA /EPSCoR**, (1999-2000) $ 4,050

“Elastomer Hysteresis Tester”, (1997-98), **Rogers Corp.** , ($5K cash, $ 15K purchases) $ 20,000.

“Paper Acceleration Tester”, (1996-97), **Rogers Corp.** , ($5K cash, $ 5K purchases) $ 10,000.

“Delayed Resonator Vibration Suppression for Torsional Oscillations”, **SEW-Eurodrive Foundation**, (9/1995-9/1997), DM 120,000.

“Delayed Resonator Application on a Circular Plate”, **Electric Boat**, (12/1995-1/1998), $ 116,000.

"A New Approach to Vibration Absorption : Delayed Resonator with Piezoelectric Actuators", **National Science Foundation ,** (9/1994-9/1997), $ 138,000.

“Tunable Torsional Vibration Absorber: the Centrifugal Delayed Resonator”, **UConn Research Foundation**, (6/1996-12/1998), $ 5,000 with supplement ($1,000).

"Variable Frequency Vibration Elimination Consortium", (1994-99), **Pratt and Whitney and Electric Boat**, $ 75,000.

“Development of a Course on an Integrated Approach to Machine Design”, **Technology Reinvestment Program (TRP) through Engineering Academy of Southern New England** (with R. Jeffers, K. Kazerounian, R. Pitchumani) (6/1994-6/1995).

"A New Approach to Vibration Suppression : Delayed Resonators" Economic Development Grant Competition Award (1993-94) **UConn, Office of the Provost**, $ 10,000.

"A New Method for Tunable Vibration Absorption: the Delayed Resonator" (1993-94) **UConn Research Foundation** $ 14,700.

"Robust Dynamic Control of High Speed Milling Process", proposal preparation support , with Profs. Billatos and Luh, (1992-93), **Conn. Dept. of Economic Development**, a component of the Precision Manufacturing Center (PMC) $ 30,000.

"Design of Precision Electric Motor Drive Controllers", **Conn. Dept. of Economic Development** (1991-95), a component of Precision Manufacturing Center (PMC). Distribution of funds:

91-92: $ 71,164; 92-93: $ 64,281; 93-94: $ 53,780; 94-95: $ 31,500 .....

Total of $ 220,725 during the first 4 years of the program.

"Experimental Study for the Sliding Mode Control on Robot Drives" (1991), an equipment grant from the **State of Connecticut** (through the PMC initiative), $ 30,000.

"Monocular 3-D Object Configuration Detection" (1990-91) equipment support from **UConn School of Engineering** $ 4,000.

"Advanced Sliding Mode Control Strategies with Robustness for Mobile Platforms" (1990-91**), UConn Research Foundation**, $ 7,400.

"Optimization of Dual Robot,Vision Guided Welding Operations" (1987-89). **Connecticut Department of Higher Education** ($ 120,000 cash) and **United Technologies Research Center** ($ 277,000 in kind).

"Optimization of Pursuit-Evasion Game Utilized For Robotic Guidance" (1987-88**), UConn Research Foundation**, $1,600.

"Support of the Mid-size ROV Development" **Max and Victoria Dreyfus Foundation**, NY, (1987). An equipment grant for drive units, $7,500.

"Remotely Operated Undersea Robot Program" (1986-89), with Prof. Kazerounian. NURP, **National Undersea Research Program (under NOAA)**, $ 140,000.

"Development of Test Standards for Filter Breathers" (1985). **Pallflex Corp**., Putnam, CT $ 5,000.

"Study On The Effects of Oscillating Cutter Hand Planes" (1985). **Stanley Tools Inc**., New Britain, CT ($ 2,000 direct, and $7,500 equipment).

"Optimal Path Finding Robot Motion Controls" , **UConn Research Foundation** (1985-86, $5,100).

"Introduction of Tactile Sensitivity to Robot Fingers" (1983-84), **Mechanical Engineering Department, UConn.**

"Identification And Feedback Control of Machine Tool Vibrations" (1982-86), **National Science Foundation (#8300236)** , Research Initiation Grant, $ 57,000.

"An Analysis On Machine Tool Vibration" (1983), **UConn Research Foundation**, $3,000..

"Machine Tool Vibrations", with Prof. Gartner, (1982-83) **SME-Society of Manufacturing Engineers**, $ 1,000 .

Curriculum Development Grant, "Eurotech Project" to develop engineering courses to be taught in German for Engineering/German double-major students . Through **the Fund for Improvement of Post Secondary Education (FIPSE**), with a group of Profs. and Prof. Kecht as P.I., $ 250,000, 1993.
Projects prior to University of Connecticut

Plenary lectures

Plenary Address, ICSC 2019 International Conference on Systems and Control, "Time –Delayed Systems Stability: Cluster Treatment of Characteristic Roots (CTCR) and Applications" , Marrakesh, Morocco, Oct. 23-25, 2019.

Plenary Address, CIIMA 2016 International Congress on Mechatronics Engineering & Automation – "Time-Delayed Systems, Bridging Between Theory and Realistic Applications"**,** Bucaramanga, Colombia, Oct. 26-28, **2016**.

Plenary Address, CCE 2014 – International Conference on Electrical Engineering, Computing Science and Automatic Control,"Novel Perspectives on Stability of Time-Delayed Systems (TDS) and Practical Implications". Ciudad del Carmen, MX, Sept. 29-Oct. 3, **2014**.

Plenary Address, SEM Annual Conference & Exposition on Experimental and Applied Mechanics, "Adaptive Hybrid Control for Low Resolution Feedback Systems with Application on a Novel Micro-injector: Ros-drill". Uncasville, CT. June 13-16, **2011**,

Plenary Address, IFAC Time Delay Systems Workshop, "Time Delayed Systems, Bridging Between Theory and Realistic Applications", Prague, Czech Republic, **2010**.

Plenary Address – TOK (Turkish Automatic Control Society) 50th Year Symposium, "TIME DELAYED SYSTEMS , A research loop from a practical problem to a novel mathematics and back to practice", Istanbul, Turkey, **2008**,

Plenary Address, IFAC Time Delay Systems Workshop, "On Delayed Resonator Vibration Absorber and Mathematical Impact", Santa-Fe, NM., **2001**.

Plenary Address ,**MOVIC, Int. Motion and Vibration Control Conference** "On Delayed Resonator Vibration Absorber and Practical Applications" , **,** Chiba, Japan, **1996**.

Keynote Lecture, "Toward the Utilization of Computer Intelligence in Metal Machining,", VII Brazilian Congress of Engineering Mechanics, San Jose dos Campos, Brazil, December, **1985**.

Consulting:

Transturk Teknik S.A., local manufacturing of electric hoists in Turkey (1977).
Plastas S.A., Istanbul, Turkey, a plastic parts manufacturer, automation and performance improvements of plastic molding operations (1978).
Torrington Co., Rogers Corp., G.B.R., Ltd. and Avco-Lycoming through design projects (1982, 1983).
Harris Corporation, design of an offset press adjustment mechanisms (1983).
Hamilton Standard, Rogers Corporation on design and control projects (1982, 1984).
Stanley Tools Co., on an automatic printing project (1983, 1984).
Howe Furniture Co., on automated silver brazing operation (1984).
Pallflex Products Corp., Putnam, CT, computerized quality testing of filters (1984).
Pratt and Whitney Aircraft, East Hartford, CT, sensory based automated manufacturing (1986-88).
U.N. Development Programs (1986-88), "Manufacturing Automation".
Editorial consultations on a book titled "Robot Control, the Task Function Approach" by C. Samson, M. LeBorgne and B. Espieau, Clarendon Press (1991).
Upright Inc. lift manufacturer / Day-Berry and Howard Law Firm (1992-93).
Czech Technical University / research cooperation program development (1992-93).
Brunswick golf club shaft manufacturer (1994).
Voith -Sulzer Inc. Heidenheim, Germany, paper making machines (1996).
Mannesmann-Demag, Dusseldorf, Germany, continuous casting machines, (1996).
Windfall Products, St. Mary's, PA., (1997).
Philips Automotive, (1997).
Cooper Instruments, (1997).
Robinson and Cole (1997).
Day, Berry and Howard (1992-2000, several projects).
Gerber Technologies (1998),
Howmet (1999),
Rogers Corp. (1999-2003)
Sikorsky Aircraft (2002-2003)
ASML, CT (2004-2005)
Scott and Scott , Ideaz Inc. (2003-2005)
Connecticut Academy of Sciences (DOT) (2007-2009)
Otokar – Turkey (2015-16)

Neapco-Honigman (2016-2017)
Czech Technical University Prague (CVUT), (2017-2018)

Invited lectures (last 10 years)

UMASS Lowell
Czech Technical University in Prague (CVUT)
Technical Univ, of Munich
Univ. Santo Tomas, Floridablanca, Colombia
Anadolu Univ. (Eskisehir, Turkey)
CINVESTAV, (Mexico City)
Hong-Kong University
Shanghai East China University of Science and Technology
Shanghai Jiaotong University
Shanghai Tongji University
Nanjing University of Science and Technology
Nanjing, Polytechnic University
Beijing Tsinghua University
Beihan University
Middle East Technical University (Ankara, Turkey)
Lund Tech. Univ. (Sweden)
University of Rostock (Germany)
Univ of Rome (la Sapienza)
University of Napoli (Federico Secondo, Italy)
Seconda Uni. di Napoli (Italy)
Stanford University
Univ. of Saarbruecken (Italy)
Tech. Univ. Clausthal (Germany)
Yildiz Technical University, (Istanbul, Turkey)
Technical University of Istanbul, (Turkey)
Koc University (Istanbul, Turkey)
Czech Technical University (Prague, Czech Republic)
UC San Diego
Southern Methodist University
Technische Univ. of Saarbruecken (Germany)
UC Berkeley
UMass- Amherst

Editorial responsibilities:

- Associate Editor**, IEEE Tran. Control Systems Technology** (2013-2019)
- Member of the Editorial Board, **IET, Control Theory and Applications**, (2013-2021)
- Member of the Editorial Board, **Bulletin of Applied Mechanics**, (2010-2016)
- Member of the Editorial Board, **Int. J. of Mechatronics and Manufacturing Systems** (2006-2016).
- Member of the Editorial Board, **J. of Vibration and Control**, (2005-2017)
- European Control Conference, Conference Editorial Board, 2014-2015
- Guest Editor (with S. Stepan, and T. Kalmar-Nagy), Special issue of **JVC / Journal of Vibration and Control on Time Delay Systems**, Volume 16, Issue 7-8, June 2010, Page 941
- Associate Editor, **ASME J. of Dynamic Systems, Measurement and Control**, 1997-2004,

- Guest Editor, **ASME J. of Dynamic Systems, Measurement and Control**, special issue on **Time Delayed Systems** , Vol. 125, No. 2, June 2003.
- Section editor, "**Vibration Control**" within the **Mechanical Systems Design Handbook**, 2001, **CRC Press,** ISBN 0-8493-8596-2.
- Editor, ASME Technical *Proceedings of the ASME, Dynamic Systems and Control Division*, DSC-Vol. 67, 1999.
- Co-editor, *Symposium on Mechatronics*, ASME DSC. Vol 50, PED Vol 53, 1993
- Co-editor, *Advances in Instrumentation*, ASME DSC. Vol 30, 1991.

Journal Articles *:*

See the most up-to-date publication info and citation numbers at Google Scholar
http://scholar.google.com/citations?view_op=list_works&hl=en&user=o6FP7rzY7I4C)

1. "Alternative Choices in Measurement Systems for Artificial River Aeration," (N. Olgac, R. W. Longman, C. A. Cooper). Water Resources Research, Vol. 16, No. 3, pp. 583-591, June 1980. Also presented at the 6th Annual Systems Modeling and Simulations Conference, Pittsburgh, PA, April 24-25, 1975.

2. "Optimal Allocation of Measurement and Control Resources with Application to River Pollution," (N. Olgac, C. A. Cooper, R. W. Longman). IEEE Transactions on Systems, Man and Cybernetics, Vol. SMC-6 (1976), pp. 377-384.

3. "Optimal Control of Artificial Aeration in River Networks," (N. Olgac, C. A. Cooper, R. W. Longman). ISA Transaction, Vol. 15 (1976), No. 4. Also appeared in Advances in Instrumentation, Vol. 30, Part 3 (1976).

4. "Improved Numerical Computation on Uniform Beam Characteristic Values and Characteristic Functions," (J. R. Gartner, N. Olgac). Journal of Sound and Vibration, October 1982, 84(4), pp. 481-489.

5. "Stochastic Artificial Aeration Control for Regional Drainage Basins," (N. Olgac, R. W. Longman, C. A. Cooper). ASME Journal of Dynamic Systems, Measurement and Control. Vol. 104, pp. 337-342, December 1982.

6. "A Study on the Computer Modeling of the Lathe Cutting Mechanism," (N. Olgac, M. Devin), International Journal of Modeling and Simulation Vol. 4, No. 4 (1984), pp. 149-152.

7. "The Impact of Costly Observations and Observation Delay in Stochastic Optimal Control Problems," (N. Olgac, C. A. Cooper, R. W. Longman). International Journal of Control, Vol. 41, No. 3, pp. 769-785, 1985.

8. "Toward the Utilization of Computer Intelligence in Metal Machining,"(N. Olgac). Brazilian J. of Mechanical Engineers, Vol. VIII, No.3, 1986.

9. "Time Series Applications for a Predictive Model of the General Turning Mechanism." (N. Olgac, G. Zhao) Transactions of Society of Computer Simulation (SCS) Fall 1986 . Vol. 2 No. 4, pp. 83-105.

10. "A Relative Stability Study on the Dynamics of the Turning Mechanisms" (N. Olgac, G. Zhao). ASME Vol. "Sensing, Models, and Control for Manufacturing Processes" 1986. Improved version published in the ASME J. of Dynamic Systems, Measurement and Control, Vol 109, pp. 164-170, June 1987.

11. "A Simplified Identification Method for Autoregressive Models of Cutting Force Dynamics" (N. Olgac, J. Guttermuth). ASME J. of Engineering for Industry, Vol. 110, No. 3, pp. 288-296. Aug. 1988.

12. "Sliding Mode Control of Remotely Operated Vehicles for Horizontal Plane Motions", (N. Olgac, B.E. Platin, J. Chang), IEE Control Theory and Applications Sept. 1991, D-Vol. 138, no. 5, pp. 469-473. Also presented 1990 ASME-Winter Annual Meeting Dallas, TX. ASME paper # 90-WA/DSC-6.

13. "Sliding Mode Control with Perturbation Estimation (SMCPE) a New Approach", (H. Elmali, N, Olgac) International J. of Control, Vol.56, No.4, 923-941, 1992.

14. "Robust Output Tracking Control of Nonlinear MIMO Systems via Sliding Mode Technique" (H. Elmali, N. Olgac) Automatica, Vol. 28, No. 1, 1992, pp. 145-151. A version presented in the ACC '91 in Boston, June 1991.

15. "A Novel Active Vibration Absorption Technique: Delayed Resonator", (N. Olgac, B. Holm-Hansen), J. of Sound and Vibration, Vol. 176, No. 1, pp. 93-104, Sept. 1994.

16. "Efficient Eigenvalue Assignments for General Linear MIMO Control Systems ", (M. Valasek, N. Olgac), Automatica, Vol. 31, No. 11, pp. 1605-1617, 1995.

17. "Design Considerations for Delayed Resonator Vibration Absorber", (N. Olgac, B. Holm-Hansen) ASCE J. of Engineering Mechanics, Vol. 121, No.1, pp. 80-89, Jan. 1995.

18. “Efficient Pole Placement Technique for Linear Time-Variant SISO Systems" (M. Valasek, N. Olgac) IEE, Tran. On Control Theory and Applications, Vol. 142, No. 5, pp. 451-457, September 1995.

19. "Sliding Mode Control with Saturation and Backlash Laws", (N. Olgac, P. Iragaravarapu) International J. of Robotics and Automation, Vol. 10, No. 2, pp. 49-55, 1995.

20. Aktive Schwingungsdaemfung Mittels Delayed Resonator, in German, (D. Filipovic, D. Schroeder, N. Olgac), VDI (Verein Deutsche Ingenieure), Nr. 1220, pp. 593-605, Sept. 1995.

21. "Tunable Active Vibration Absorber: the Delayed Resonator", (N. Olgac, B. Holm-Hansen), ASME J. of Dynamic Systems, Measurement and Control, Vol. 117, No. 4, pp. 513-519, Dec. 1995.

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139. “Thermo-acoustic instability: Theory and experiments” (U.Zalluhoglu, N.Olgac) IFAC-Time-Delay Systems Workshop, 2015, Ann Arbor, MI.

140. “Dixon Resultant for Cluster Treatment of LTI Systems with Multiple Delays”,(Q. Gao, N. Olgac), IFAC-Time-Delay Systems Workshop, 2015, Ann Arbor, MI.

141. The Influence of Structural Parameters on the Stability of Blade-Casing Interactions in Turbomachinery”, (A. S. Kammer, N. Olgac), IFAC-Time-Delay Systems Workshop, 2015, Ann Arbor, MI.

142. “Feedback Stabilization of a Thermoacoustic Device with Experiments”, (U. Zalluhoglu, A.. S. Kammer, N. Olgac), ACC 2015, Chicago, IL, 2015.

143. “Eigenvalue Assignment for Systems with Multiple Time-delays”, (R. Schmid, Q, Gao, N. Olgac), SIAM Conference on Control and Its Applications , Paris, France July 8-10, 2015.

144. Non-conservative Stability Assessment of LTI Dynamics with Distributed Delay Using CTCR Paradigm", (A.S. Kammer, N. Olgac), ACC 2015, Chicago, IL, 2015.

145. Placement of Helmholtz resonators in series for passive control of thermoacoustic instabilities from a time-delay perspective, (Umut Zalluhoglu, Nejat Olgac), Chicago, ACC 2016.

146. Enhancing Energy Harvesting Capacity using Delayed Feedback Control, (Ayhan S. Kammer, and Nejat Olgac), Chicago, ACC 2016.

147. Investigation of the bounds of imaginary spectra of LTI systems with multiple time delays, (Qingbin Gao, Nejat Olgac) Chicago, ACC 2016.

148. Passive suppression of thermoacoustic instability in a Rijke tube, (Umut Zalluhoglu, Nejat Olgac), Istanbul, Turkey, TDS 2016.

149. Electromechanical Delayed Resonator Implementation using Piezoelectric Networks
Ayhan S. Kammer*, Nejat Olgac, Istanbul, TR, TDS 2016.

150. "Thermoacoustic Instabilities arising from secondary modes, an analytical and experimental declaration", (U. Zalluhoglu, N. Olgac), Las Vegas, CDC 2016.

151. "Double Imaginary Root Degeneracies in Time-Delayed Systems and CTCR Treatment", (R. Jenkins, N. Olgac), Tysons Corner, VA., ASME-DSCC, 2017.

152. "An Effective Algorithm to Achieve Accurate Sinusoidal Amplitude Control with a Low-resolution Encoder", (Z. Zhang, N. Olgac, Q. Gao), AIM (Advanced Intelligent Manufacturing), Munich, Germany, 2017.

153. "New perspectives on criticality of multiple identical imaginary roots (MIR) in time-delayed systems", (R. Jenkins, N. Olgac), ACC (American Control Conference) , Milwaukee ACC, 2018.

154. "Exploring Operational Frequency Ranges for Actively-tuned single-mass multiple-frequency Vibration Absorber" (M. Valasek, N. Olgac, Z. Neusser), Indian Control Conference, Delhi, Jan. 2019.

155. "A Structured Treatment of Wave-Based Control (WBC) and Discussions on Earlier Misconceptions" (M Valasek, O Marek, N Olgac, Z Neusser) - 8th International Conference on Systems and Control, Marrakesh, Morocco, 2019.

156. "Time-delayed Tuning of Vibration Absorbers for Non-collocated Suppression", (N. Olgac, R. Jenkins), ACC, Denver, CO. 2020..

157. "Delay Scheduling of a LQR and PID Controlled Pendubot Using CTCR Method´ Helio S Esteban Villegas, Carlos Borrás Pinilla, Nejat Olgac, ASME, IMECE 2020.

158. CTCR approach to the complete stability of TDS with multiple identical imaginary roots" (N Olgac, R Jenkins, U Zalluhoglu) European Control Conference (ECC), St. Petersburg, Russia, 2020.

159. Benchmark Problem: Non-collocated Vibration Absorption Concept Challenges and Trends, (N. Olgac, R. Jenkins), IFAC-TDS Workshop, Montreal, Canada. 2022.

Patents :

1) **Delayed Resonators as Active Dynamic Absorbers** (N. Olgac, *sole inventor*)
US patent no. 5,431,261; issue date: July 11, 1995

2) **Single Mass Dual Frequency Fixed Delayed Resonators** (N. Olgac, *sole inventor*)
US patent no. 5,505,282, issue date : April 9, 1996.

3) **Tunable Torsional Vibration Absorber: The Centrifugal Delayed Resonator,** (M Hosek, H. Elmali and N. Olgac), US patent no. 5,934,424, issue date : August 10, 1999.

4) **"Method for Facilitating Chatter Stability Mapping in a Simultaneous Machining Application"** (N. Olgac, *sole inventor*), US Patent no. 8,011,864, issue date: September 6, 2011.

Hobbies :

Sports	:	Tennis (advanced), Squash (competitive), Swimming (advanced) and Skiing (alpine and cross-country)
Music	:	Accordion, Turkish Classical Music chorus

Society memberships and activities:

American Control Conference 2018, Special Sessions Chair, Milwaukee, WI., June 2018.

Director AACC BOD (2013-15), **Alternate Director** (2011-2013),

IPC Member, IFAC-Time Delay System Workshop, Istanbul, Turkey, June 2016..

Member, ASME Systems and Design Group (SDG) Operating Board, in charge of Conference operations. (2012-2014),

NPC Member, IFAC Time Delay Systems Workshop, Ann Arbor, MI, June, 2015.

IPC Member, 15th International Conference on System Theory, Control, Romania, 2011, 2013.

Member at Large , ASME Systems and Design Group OpCom. (2008-2014),

Program Chair, DSCC 2009, ASME Dynamic Systems and Control Conference, This is the second round of the conference I helped initiate.

Elected Member, ASME-COD (Conference of Divisions), in charge of the Technical Publications, (2008-2011).

Member - DSCD Advisory Committee, ASME Dynamic Systems and Control Division (07-10),

Member, Conferences Committee, ASME – DSCD (2007-2010).

Member, IFAC Technical Committee on *Linear Control Systems*, **TC 2.2**, (2006-present)

Member, IFAC Technical Committee on *Distributed Parameter Systems*, **TC 2.6**, (2012-present)

Member, IFToMM (Int. Federation of Mechanism and Machinery) Technical Committee for Mechatronics (1995-present)

Assoc. Editor, ASME J. of Dynamic Systems, Measurement and Control (1997-2004)

Executive Committee Member, ASME, Dynamic Systems and Control Division. (2002-2007)

Executive Committee Vice Chair, ASME, Dynamic Systems and Control Division. (2004-2005)

Executive Committee Chair, ASME, Dynamic Systems and Control Division. (2005-2006)
Key achievements during this period:

- Introduced and obtained consensus support for society-wide elections of ExCom members- This election process is in practice today. Two-tier election operation brings forward the candidates that are favored by the peers.

- Started a new tradition, *Nyquist lecture*, which is repeated annually. It recognizes distinguished researchers by providing an annual lecturing forum to all the attendees of ASME Dynamic Systems and Controls Conference.

- Spearheaded the new DSCD Conference (now called the Dynamic Systems and Controls Conference-DSCC) initiative. This is all-volunteer activity, and the first one took place in Fall 2008). I was the General Chair for the sixth of DSCC series in 2013) at Stanford Univ.

Chair, Ad-hoc Committee for establishing a new conference for the DSCD Division of ASME, 2006. (This very critical activity for the Division, resulted in a new conference which will start in 2008).

Chair, Steering Committee for DSCD Conference, Dynamic Systems and Control Conference (2007-08),

2009	Program Chair, ASME-DSCC (Dynamic Systems and Control Conference) LA, CA.
2006	Symposium organizer, IFAC (TDS) Workshop, L'Aquila, Italy.
2001-03	Chairman, **Noise and Vibration Control Panel**, ASME/DSCD
2001-03	Symposium organizer, ASME-IMECE 2001, Active Control of Noise and Vibration
1999	ASME-IMECE Program Chair for the DSC Division.
1996-97	**IEEE/ASME Conference on Control Applications CCA '97**, Workshop Chairman.
1991-96	**Member of Board of Directors-Founding Member**, Technical University of Istanbul International Alumni Assoc.
1993-96	Chairman, **Instrumentation and Components Panel of DSC Division/ASME**
1994-2001	Member, Vibration and Noise Technical Committee l of DSC Division/ASME
2002-present	Member, Mechatronics Technical Committee of DSC Division/ASME
2002-present	Vibration Control of Smart Structures Technical Committee/ DSC Division/ASME
1991-99	Session Organizer ASME/Winter Annual Meeting , DSC Division
1985	Member, Organizing Committee of MECO 85 (Measurement and Control), Istanbul, Turkey
1984	**Local Organizing Chairman**, AMSE Summer Conference on Modeling and Simulation

University services at UCONN (last 5 years only)

Vice President's Research Integrity Committee (2010)

President's Technology Transfer and Commercialization Committee (UCONN)

Dean's Council on Promotion, Tenure and Reappointment (2009-2011)

Promotion, Tenure and Re-appointment Committee, ME Dept. (Chair and member) (2011-2013)

Courses and Curriculum Committee (Chair of ME Dept. C&CC and member of the School's C&CC)

Faculty search committees (ME Dept., resulted in 4 hires in the last 3 years, was the chair of the committee in one of the searches)

Mission critical and consensus building services in UCONN - ME Department:

Chair – Systems and Mechanics Group, UCONN Mechanical Engineering Dept. (entails 12 tenured and 2 tenure track faculty members in the Department)

Restructuring of ME Senior Design Projects / Industry sponsored format

Reforming ME Ph.D. Qualifying Examinations

Chair of "Non-uniform Teaching Load Committee"

Department Head renewal committee

Workshops Organized (for local industry)

Automation for Manufacturing (1984-88) twice yearly

Activity was arranged especially for United Technologies Corporation engineers (Pratt and Whitney, Otis, Hamilton, Sikorsky etc.). 1-week long on-campus, hands-on practice for variety of aspects from Programmable Logic Controllers (PLC), Milling CNC programming, Servomotor design. 30-40 participants. State-of-the-art advances in automation. Completely discretionary fund raising activity.

Graduate students (Completed): **Blue underlined** are presently faculty members

John Guttermuth, M.S., 1987,	A Fundamental Study for the Identification of Machine Tool Vibrations.
Marty Wood, M.S., 1987,	Optimal Strategies for Mobile Robot Motions.
Hakan Elmali, M.S., 1987,	An Optimal Energy Problem for Oscillatory Motions of Robotic Manipulators.
Jeff Chang, M.S., 1989,	An Application of Sensory Force/Path Control for ASEA IRb6/S1 Robot.
Jeh-min Chang, Ph.D., 1991,	Sliding Mode Control of Multi-Input-Multi-Output Nonlinear Systems.
Hakan Elmali, Ph.D.., 1992,	Robust Output Tracking Control of MIMO Nonlinear Systems.
Brian Holm-Hansen, M.S., 1994	A New Technique for Active Dynamic Vibration Absorption: Delayed Resonator.
Prasad Iragaravarapu, Ph..D., 1994,	Robustness Features of the Sliding Mode Control for Reduced Order Systems .
Mark Renzuli, M.S. (EE) 1996	Robustness of Delayed Resonators via Auto-tuning Process.
Rajiv Ghosh-Roy, M.S. 1996	Moving Sliding Surfaces for Faster Tracking of Nonlinear Uncertain Systems- the nth Order Case
Jairo Moura, Ph.D., 1997	Design of Perturbation Observers and Input Shaping for Sliding Mode Control of Multi-Axes-Mechanisms".
Martin Hosek, Ph.D. , 1997	Tunable Torsional Vibration Absorber: The Centrifugal Delayed Resonator.
Nader Jalili, Ph.D., 1998	Optimum Vibration Suppression of Flexible Structures Using Delayed Feedback (Univ. of Alabama, Tuscaloosa)
Chang Huang, M.S., 2000	An Active Vibration Absorber: Multiple Frequency Delayed Resonator
Rifat Sipahi, M.S., 2002	A Unique Treatment of Time Delay System Stability: The Direct Method
Oldrich Mikus, M.S. , 2003	The Design and Control of a Harmonic Force Generator
Kerem Ediz, M.S., 2003	The Effect of Mercury on the Micro-dynamics of the Injection Pipettes.
Rifat Sipahi, Ph.D., 2005	Cluster Treatment of Characteristic Roots, CTCR, A Unique Methodology for the Complete stability Robustness Analysis of Linear Time Invariant Multiple Time Delayed Systems Against Delay Uncertainties. (Northeastern Univ. Boston)
Ali Fuat Ergenc, Ph.D., 2007	A Novel Method of ICSI: Rotationally Oscillating Drill, Design, Control and Monitoring. (Technical Univ. of Istanbul, Turkey)

Hassan Fazelinia, Ph.D., 2007	A Novel Stability Analysis of Systems with Multiple Time Delays and its Application to High Speed Milling Cutter, Multiple Time Delayed Systems
Emre Cavdaroglu, M.S., 2008	Control of Time-Delayed Systems with Utilization of "Delay Scheduling" Technique (Aselsan,, Ankara Turkey).
Paul McCullough, M.S., 2009	A Lyapunov Treatment of Swarm Coordination Under Conflict
Mark Bacon, M.S., 2010	Robust Region Tracking in Multi-Agent Systems Utilizing Sliding Mode Control: Theory and Applications (Electric Boat, Groton, CT).
John Diaz, M.S., 2011	Visual Feedback Control and Rotational Motion Tracking
Rudy C. Gomez, Ph. D., 2012	Exact and Exhaustive Stability Analysis of Linear Consensus Protocols with Time-Delay (Rolce Royce-Deutschland)
Zhenyu Zhang, Ph.D., 2012	Control Design and Analysis for Rotationally Oscillating Drill (Ros-Drill), with Low-Resolution Feedback (Western Digital, CA).
Qingbin Gao, Ph.D., 2015	Sign Inverting Control (SIC) for Multiple delay Systems (Cal State – Long Beach)
Umut Zalluhoglu, Ph.D. 2016	Analysis and Control of Thermoacoustic Instability: A Time Delay Systems Approach, (Halliburton Research, Houston, TX).
Ayhan Kammer, Ph.D. 2016	Delayed Feedback Control Schemes for Vibration Suppression and Energy Harvesting with Piezoelectric Resonators, (Mathworks, Waltham, MA).
Ryan Jenkins, M.S. 2018	Non-Collocated Vibration Suppression with Actively Controlled Resonant-Style Absorbers for Simultaneous Spectral and Spatial Tuning Time delays influencing infinite modes . (Pratt and Whitney, E. Hartford, CT)