CV May 2025

Kamal Youcef-Toumi

Date: May 30, 2025

Department: Department of Mechanical Engineering

Education Records

Institution	Degree	Date	Specialization	Thesis Title
MIT	ScD in Mechanical Eng.	June 1985	Robotics	Analysis, Design and Control of Direct- Drive Manipulators
MIT	SM in Mechanical Eng.	June 1981	Automatic Control Systems	
University of Cincinnati	BS in Mechanical Eng.	June 1979	Mechanical Engineering	

Professional Statements

Name	Professional Statement

Background:

My lab members and I take an interdisciplinary approach to research and development. The activities include (i) fundamental research in physical system modeling, mechatronic design, control theory, and computational intelligence; with (ii) methods in algorithms, simulation, visualization, instrumentation, fabrication, and experimentation; and (iii) application projects in the fields of robotics and automation, nanotechnology, and intelligent systems.

For additional information on publications, invited lectures, conferences and current research projects, please see the Mechatronics Research Laboratory website at http://mechatronics.mit.edu/

Fields of Interest

Field of Interest
Dynamic systems and controls, modeling and simulation of multi-disciplinary engineering systems, mechatronic design of precision machines, robotics and manufacturing automation, and high speed imaging at the nanoscale.

MIT Appointments

Title	Type	Department	Begin Date	End Date
Co-Director, Center for Complex Engineering Systems	Additional Appointment	Department of Mechanical Engineering	1/1/2017	-
Director, Ibn Khaldun Fellowship for Saudi Arabian Women	Additional Appointment	Department of Mechanical Engineering	July 2012	-
Head, Mechanical Engineering Controls, Robotics and Instrumentation area	Additional Appointment	Department of Mechanical Engineering	July 2008	July 2011
Co-Director of Center for Clean Water and Clean Energy at MIT and KFUPM	Additional Appointment	Department of Mechanical Engineering	July 2008	June 2018
Professor	Primary Appointment	Department of Mechanical Engineering	7/1/1998	-
Associate Professor with tenure	Primary Appointment	Mechanical Engineering	7/1/1992	6/30/1998
Associate Professor without tenure	Primary Appointment	Mechanical Engineering	7/1/1989	6/30/1992

Assistant Professor	Primary Appointment	Mechanical Engineering	1/1/1986	6/30/1989
Research Associate	Primary Appointment	Mechanical Engineering	6/1/1985	12/31/1985

Non-MIT Experience

Employer	Title	Begin Date	End Date
Qatar Computing Research Institute	Research and Strategy Advisor	June 2011	August 2012

Honors and Awards

Award Name	Date
IAAM Scientist Medal Lecture in the Baltic Conference Series	2023
National Instruments Engineering Impact Award in Advanced Research	2014
American Society of Mechanical Engineers Fellow	2013
Winner of the 1998 Best Paper Award of the ASME Journal of Dynamic Systems, Measurement and Control.	1999
Carl Richard Soderberg Career Development Chair, Professorship in Power Engineering. (A two year appointment.)	1988
Presidential Young Investigator, National Science Foundation Award in Recognition of Research and Teaching Accomplishments. (A five year appointment.)	1987
Winner of the O. Hugo Schuck Best Paper Award for paper presented at the 1984 American Control Conference and entitled “Analysis and Design of a Direct-Drive Arm with a Five-Bar-Link Parallel Drive Mechanism.”	1985
Two-year fellowship award for graduate studies.	1979
Past member of Who's Who Among Students in American Universities & Colleges.	1978
Four-year fellowship award for undergraduate studies.	1975

Publications

Books

Publication Name and Url	Publication Date
F.W. Paul and K. Youcef-Toumi, Editors, Robotics: Theory and Applications, ASME Book DSC-. Vol. 3, 1986. ISBN: 978-9997866127.	1986
Paul, F.W. and K. Youcef-Toumi, Editors, Robotics: Theory and Applications, Symposium Volume of the Winter Annual Meeting of the American Society of Mechanical Engineers, December 1986.	December 1986
Asada, H. and K. Youcef-Toumi, Direct-Drive Robots: Theory and Practice, MIT Press, June 1987. ISBN: 978-0262010887.	June 1987
Shoureshi, R., K. Youcef-Toumi, and H. Kazerooni, Editors, Modeling and Control of Robotic Manipulators and Manufacturing Processes. Symposium volume of the Winter Annual Meeting of the American Society of Mechanical Engineers, December 1987.	December 1987
K. Youcef-Toumi and H. Kazerooni, Editors, Symposium on Robotics, ASME Winter Annual Meeting, sponsored by the ASME Robotics Technical Panel of the Dynamic Systems and Control Division, Chicago Illinois, December 1988.	December 1988
K Youcef-Toumi and H. Kazerooni. , Editors, Robotics Research, The Winter Annual Meeting of the American Society of Mechanical Engineers; sponsored by the ASME Robotics Technical Panel of the Dynamic Systems and Control Division. Call No.: TJ210.3 .A478 , San Francisco, California, December 10-15, 1989. ISBN 0791804135 / 9780791804131 / 0-7918-0413-5.	December 1989
K. Youcef-Toumi and H. Kazerooni, Editors, Advances in Robotics, ASME Winter Annual Meeting, sponsored by the ASME Robotics Technical Panel of the Dynamic Systems and Control Division, Dallas, TX, November, 1990. ISBN 0791807444 / 9780791807446 / 0-7918-0744-4	November 1990
Khalid El Rifai and Kamal Youcef-Toumi (December 1st 2009). Robust Adaptive Control of Switched Systems, Switched Systems, Janusz Kleban, IntechOpen, DOI: 10.5772/7041 www.intechop...	December 2009
Vijay Shilpiekandula, Kamal Youcef-Toumi “Dynamic Modeling and Performance Trade-offs in Flexure-based Positioning and Alignment Systems” DOI: 10.5772/6981, January 2010; ISBN: 978-953-7619-55-8 www.intechop...	January 2010
Sergio Rivera, Amro M Farid, Kamal Youcef-Toumi, 1 edited by Stamatis Karnouskos, Paulo Leitao, A Multi-Agent System Coordination Approach for Resilient Self-Healing Operation of Multiple Microgrids Industrial Agents: Emerging Applications of Software Agents in Industry, 03/2015: chapter 15: pages 476; Springer Berlin Heidelberg., ISBN: 9780128003411	March 2015
Ruxu Du, Zheng Li, Kamal Youcef-Toumi and Pablo A Valdivia Y Alvarado, Editors. Robot Fish : Bio-inspired Fishlike Underwater Robots, Springer-Verlag Berlin Heidelberg 2015, ISBN 978-3-662-46869-2, ISBN 978-3-662-46870-8 (e-Book), Library of Congress control number 2015936287.	May 2015
Guest editor: RGB-D Vision: Methods and Applications, IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 42, No 10 ieeexplore.i...	October 2020
F. Xia, I.W. Rangelow, K. Youcef-Toumi, Active Probe Atomic Force Microscopy: A textbook on Advanced Instrumentation, Textbook by Springer	February 2024
K. Youcef-Toumi. Active Probe Atomic Force Microscopy. Springer Verlag, 2025. Print.	February 2025
Zhiguang Xu, Kamal Youcef-Toumi and Soon Fatt Yoon, Book Chapter, ”Applications and Nanomanufacturing of Modern Microfluidic Devices”, in ”Global Nanomanufacturing Research”, Nova Science Publishers, Inc., Hauppaugue, NY, USA. Accepted for publication	-
K. Youcef-Toumi, Modeling, Simulation and Controls. In preparation	-

Papers in refereed journals

Publication Name and Url	Publication Date
Youcef-Toumi, K. and H. Asada, “The Design of Open-loop Manipulator Arms with Decoupled and Configuration-Invariant Inertia Tensors,” ASME Journal of Dynamic Systems, Measurement and Control 109(3), 268–275, September 1987. dynamicsyste...	September 1987
Youcef-Toumi, K., W.S. Liu, and H. Asada, “Computer Aided Analysis of Reconfigurable Fixtures and Sheet Metal Parts for Robotic Drilling,” International Journal of Robotics and Computer-Integrated Manufacturing 4(3/4), 387–393, 1988.	January 1988
Youcef-Toumi, K. and A.T.Y. Kuo, “Design and Control of a High Speed Direct-Drive Manipulator,” International Journal of Production Research on Robotics 27(3), 375–394, 1989.	January 1989
Fields, A., K. Youcef-Toumi, and H. Asada, “Flexible Fixturing and Automatic Drilling of Sheet Metal Parts Using a Robot Manipulator,” International Journal of Robotics and Computer-Integrated Manufacturing 5(4), 371–380, 1989.	January 1989
Youcef-Toumi, K., J.J. Bausch, and S.J. Blacker, “Automated Set-up and Reconfiguration for Modular Fixturing,” International Journal of Robotics and Computer- Integrated Manufacturing 5(4), 357–370, 1989.	January 1989
Youcef-Toumi, K. and J.H. Buitrago, “Design and Implementation of Robot-operated Adaptable and Modular Fixtures,” International Journal of Robotics and Computer- Integrated Manufacturing 5(4), 343–356, 1989.	January 1989
Youcef-Toumi, K. and O. Ito, “Time Delay Controller of Systems with Unknown Dynamics,” ASME Journal of Dynamic Systems, Measurement and Control 112(1), 133–142, March 1990.	January 1990
Youcef-Toumi, K. and J. Bobbett, “Stability of Uncertain Linear Systems with Time Delay,” ASME Journal of Dynamic Systems, Measurement and Control 113(4), 558– 567, 1991.	January 1991
Youcef-Toumi, K., “Analysis and Design of Manipulators with Decoupled and Configuration-Invariant Inertia Tensors Using Remote Actuation,” ASME Journal of Dynamic Systems, Measurement and Control 114(2) 204–212, June 1992. dynamicsyste...	June 1992
Youcef-Toumi, K. and S. Reddy, “Analysis of Linear Time Invariant Systems with Time Delay,” ASME Journal of Dynamic Systems, Measurement and Control 114(4), 544–555, December 1992. dynamicsyste...	December 1992
Youcef-Toumi, K. and S. Reddy, “Dynamic Analysis and Control of High Speed and High Precision Magnetic Bearings,” ASME Journal of Dynamic Systems, Measurement and Control 114(4), 623–633, December 1992. doi:10.1115/...	December 1992
Youcef-Toumi, K. and A.T.Y. Kuo, “High Speed Trajectory Control of A Direct-Drive Manipulator,” IEEE Transactions on Robotics and Automation 9(1), 102–108. ieeexplore.i...	February 1993
Youcef-Toumi, K. and D. Gutz, “Impact and Force Control: Modelling and Experiments,” ASME Journal of Dynamic Systems, Measurement and Control 116(1), 89–98, March 1994. doi:10.1115/...	March 1994
Khan, Y., P. Kulkarni, and K. Youcef-Toumi, “Modelling, Experimentation and Simulation of a Brake Apply System,” ASME Journal of Dynamic Systems, Measurement and Control 116(1), 111–122, March 1994. dynamicsyste...	March 1994
Wu, S.-T. and K. Youcef-Toumi, “On Relative Degrees and Zero Dynamics from Physical System Modelling,” ASME Journal of Dynamic Systems, Measurement and Control 117(2), 205–217, June 1995. doi:10.1115/...	June 1995
Youcef-Toumi, K., “Modeling, Design and Control Integration: A Necessary Step in Mechatronics,” IEEE/ASME Transactions on Mechatronics 1(1), 29–38, March 1996. ieeexplore.i...	March 1996
Yeh, T.-J. and K. Youcef-Toumi, “Adaptive Control of Nonlinear, Uncertain Systems Using Local Function Estimation,” ASME Journal of Dynamic Systems, Measurement and Control. 1998. Winner of the 1998 Best Paper Award of the ASME Journal of Dynamic Systems, Measurement and Control. doi:10.1115/...	January 1998
Farhoud, M; Hwang, M; Smith, HI; Schattenburg, ML; Bae, JM; Youcef-Toumi, K; Ross, CA, ”Fabrication of large area nanostructured magnets by interferometric lithography”, IEEE TRANSACTIONS ON MAGNETICS, 34 (4): 1087-1089 Part 1 JUL 1998. ieeexplore.i...	July 1998
Huang, S.-Y. and K. Youcef-Toumi, “Zero Dynamics of Physical Systems from Bond Graph Models: Part I SISO Systems,” ASME Journal of Dynamic Systems, Measurement and Control. 121(1), 1–10, March 1999. doi:10.1115/...	March 1999
Huang, S.-Y. and K. Youcef-Toumi, “Zero Dynamics of Physical Systems from Bond Graph Models: Part II MIMO Systems,” ASME Journal of Dynamic Systems, Measurement and Control. 121(1), 18–27, March 1999. doi:10.1115/...	March 1999
Jungmok Baea, Sang-gook Kim, Mark Mondol, Maya Farhoud, Minha Hwang, and Kamal Youcef-Toumi, ”Experimental study of interactions in the nanostructured Ni pillar arrays”, JOURNAL OF APPLIED PHYSICS, VOLUME 87, NUMBER 9. www.research...	May 2000
El Rifai Osamah, and Youcef-Toumi, Kamal, ”Trade-offs and Performance Limitations in Mechatronic Systems: A Case Study”, IFAC Journal of Annual Reviews in Control, 28 (2), pp 181-192, 2004. www.infona.p...	January 2004
A. N. Zhang, A. Y. Nee, K. Youcef-Toumi, W. F. Lu, W. Lan, B. Ma "An Intelligent Color Quality Control Method for Digital Printing" NIP & Digital Fabrication Conference [21694451] 20.1 (2004): 399-404. Print. 10.2352/ISSN...	January 2004
A. N. Zhang, A. Y. Nee, K. Youcef-Toumi, W. F. Lu, W. Lan, B. Ma "ICC Profile Verification for Digital Printing" NIP & Digital Fabrication Conference [21694451] 20.1 (2004): 351-356. Print. 10.2352/ISSN...	January 2004
Orbak, AY; Turkay, OS; Eskinat, E; Youcef-Toumi, K. ”Model reduction in the physical domain”, JOURNAL OF SYSTEMS AND CONTROL ENGINEERING, 218 (I3): 250-250.	May 2004
V. Saptari and K. Youcef-Toumi, ”Design of a mechanical-tunable filter spectrometer for noninvasive glucose measurement,” Journal of Applied Optics, Vol 43, No. 13, pp. 2680-2688 (2004) www.osapubli...	May 2004
O. M. El Rifai, K. Youcef-Toumi "Robust Adaptive Control of Atomic Force Microscopes" IFAC Proceedings Volumes [14746670] 37.14 (2004): 669-674. Print. 10.1016/S147...	September 2004
A. N. Zhang, A. Y. Nee, K. Youcef-Toumi, W. F. Lu, B. Ma, W. Lan "The New Challenge for Color Management in Digital Printing" NIP & Digital Fabrication Conference [21694451] 21.1 (2005): 421-424. Print. 10.2352/ISSN...	January 2005

Youcef-Toumi, Kamal, Saptari, Vidi. "Measurements and quality assessments of near-infrared plasma glucose spectra in the combination band region using a scanning filter spectrometer" Journal of Biomedical Optics 10.6 (2005): 064039. hdl.handle.n...	January 2005
El Rifai Osamah, and Youcef-Toumi, Kamal, "On Automating Atomic Force Microscopes: An Adaptive Control Approach", Journal of Control Engineering Practice, Vol. 5, p. 349-361. opac.vimaru....	October 2005
Liu, Y., Loh, H. T., Kamal, Y.-T. & Tor, S. B.: "Handling of Imbalanced Data in Text Classification: Category Based Term Weights". In Kao, A. & Poteet, S. (Ed.), Text Mining and Natural Language Processing. Springer Verlag, Berlin (2006) link.springe...	January 2006
Youcef-Toumi, Kamal, Yuan, Miaolong, Pang, Yan, Ong, Soh, Nee, Andrew. "Assembly feature design in an augmented reality environment" Assembly Automation 26.1 (2006): 34-43. www.emeraldi...	January 2006
D. J. Burns, K. Youcef-Toumi "SINGLE-MOLECULE DNA SEQUENCING WITH FUNCTIONALIZED CARBON NANOTUBE PROBES" IFAC Proceedings Volumes [14746670] 39.16 (2006): 825-830. 10.3182/2006...	2006
Liu, Y., Loh, H. T., K. Youcef-Toumi & Tor, S. B.: " Manufacturing Concepts Handling in Automated Text Categorization". In Journal of Intelligent Manufacturing.	January 2006
P. Valdivia y Alvarado and K. Youcef-Toumi, "Design of Machines with Compliant Bodies for Biomimetic Locomotion in Liquid Environments", ASME Journal of Dynamic Systems measurement and Control, March 2006, Volume 128, Issue 1, pp. 3-13. doi:10.1115/...	March 2006
C.H. Kua, Y.C. Lam, I. Rodriguez, C. Yang and K. Youcef-Toumi, "Dynamic Cell Fractionation and Transportation Using Moving Dielectrophoresis", Analytical Chemistry, 2007, 79, 6975-6987. pubs.acs.org...	January 2007
G. Fu, S.G. Li, I. Reading, P. Chaturvedi, S.B. Tor, S.F. Yoon, and K. Youcef-Toumi. "Investigation of the dimensional variation of microstructures through the μMIM process" International Journal of Nanomanufacturing [17469392] 1.6 (2007): 722. dx.doi.org/1...	January 2007
Youcef-Toumi, Kamal, Burns, Daniel. "Shortening carbon nanotube-tipped AFM probes" International Journal of Nanomanufacturing [17469392], Volume 1, No. 6, pp. 799- 809. 2007 www.indersci...	January 2007
S.G. Li, G. Fu, I. Reading, S.B. Tor, N.H. Loh, P. Chaturvedi, S.F. Yoon, K. Youcef-Toumi, "Dimensional variation in production of high-aspect-ratio micropillars array by micro powder injection molding", Applied Physics A - Materials Science & Processing, Applied Physics Vol.89, No.3 721728. link.springe...	January 2007
Chin Hock Kual, Yee Cheong Lam, Isabel Rodriguez, Chun Yang and Kamal Youcef-Toumi, "Cell Motion Model for Moving Dielectrophoresis", Analytical Chemistry, Vol. 80, No.14 (2008)5454-61. pubs.acs.org...	January 2008
Liu, Ying, Loh, Han Tong, Tor, Shu Being Youcef-Toumi, Kamal. "A hierarchical text classification system for manufacturing knowledge management and retrieval" International journal of knowledge management studies : IJKMS.- [Olney, Bucks.] : Inderscience Enterprises Ltd., ISSN 1743-8268, ZDB-ID 22318951. - Vol. 2.2008, 4, p. 406-425 www.indersci...	January 2008
Chin Hock Kual, Yee Cheong Lam, Chun Yang, Kamal Youcef-Toumi and Isabel Rodriguez, "Modeling of Dielectrophoretic Force for Moving Dielectrophoresis Electrodes", Journal of Electrostatics, Vol. 66, Issues 9-10 (2008) 514-525. www.sciencedi...	January 2008
Vijay Shilpiekandula, Daniel J. Burns, Li Shiguang, Xu Zhiguang, Hayden K. Taylor, Kamal Youcef-Toumi, Zhongping Fang, Ivan Reading, Soon Fatt Yoon, "Fusion of Metrology Data for Large-Scale High-Volume Manufacturing of Polymer-based Microfluidic Devices", International Journal of Nanomanufacturing, Vol. 3, No.4 pp. 312-336 (2009). www.indersci...	January 2009
Youcef-Toumi, Kamal, Fang, Zhongping, Boning, Duane, Taylor, Hayden, Yoon, Soon, et al. "Three-dimensional profile stitching based on the fiducial markers for microfluidic devices" Optics Communications 282.4 (2009): 493-499. www.sciencedi...	February 2009
J. Alqabandi, Kamal Youcef-Toumi, etc.. "Extracting Cancer Cell Line Electrochemical Parameters at the Single Cell level using a Microfabricated Device ", Biotechnology Journal, [1860-6768], Vol.4 iss:2, page 216-23, 2009. onlinelibrar...	February 2009
Youcef-Youmi, K., Chong, J.W.S, Ong, S., Nee, A.Y.C. "Robot programming using augmented reality: An interactive method for planning collision-free paths" Robotics and Computer-Integrated Manufacturing 25.3 (2009): 689-701.	June 2009
Brenden P. Epps, Pablo Valdivia y Alvarado, Kamal Youcef-Toumi and Alexandra H. Techet "Swimming Performance of a Biomimetic Compliant Fish-Like Robot." Experiments in Fluids Vol. 47 No. 6 (2009): 927-939. link.springe...	June 2009
Zhiguang Xu, Vjay Shilpiekandula, Kamal Youcef-Toumi, etc.. "A White Light Scanning Interferometer for absolute micro gap thickness measurement", Optics Express, Vol. 17 No 17, Aug. 17th, 2009. www.osapubli...	August 2009
Zhiguang Xu, Haden K. Taylor, Duane S. Boning, Soon Fatt Yoon, and Kamal Youcef-Toumi "Large-area and high-resolution distortion measurement based on moire fringe method for hot embossing process", Optics Express, Vol. 17, No 21, Sept. 28th, 2009. dx.doi.org/1...	September 2009
M. Al-Qadhi, N. Merah, A. Matin, N. Abu-Dheir, M. Khaled, K. Youcef-Toumi "Preparation of superhydrophobic and self-cleaning polysulfone non-wovens by electrospinning: influence of process parameters on morphology and hydrophobicity" Journal of Polymer Research [10229760] 22.11 (2015): . Print. 10.1007/S109...	September 2009
G E Fantner, W. Schumann, R. J. Barbero, A. Deutschinger, V. Todorov, D. S. Gray, A. M. Belcher, I. W. Rangelow and K. Youcef-Toumi "Use of Self-Actuating and Self-Sensing Cantilevers for Imaging Biological Samples in Fluid." Nanotechnology Vol. 20 , No 43 (2009). iopscience.i...	October 2009
Georg E. Fantner, Daniel J. Burns, Angela M. Belcher, Ivo W. Rangelow, Kamal Youcef-Toumi, "DMCMN: In Depth Characterization and Control of AFM Cantilevers with Integrated Sensing and Actuation." Journal of Dynamic Systems Measurement and Control Vol. 131 Issue 6 (2009): 061104. dynamicsyste...	November 2009
Shilpiekandula, Vijay, Daniel Burns, and Kamal Youcef-Toumi. "An instrument transfer function approach to atomic force microscopy for surface metrology" International Journal of Nanomanufacturing, Vol 6, Issue 1-4. dx.doi.org/1...	January 2010
V. Shilpiekandula, K. Youcef-Toumi "Integrated Design and Control of Flexure-Based Nanopositioning Systems — Part I: Methodology" IFAC Proceedings Volumes [14746670] 44.1 (2011): 9406-9412. 10.3182/2011...	2011
V. Shilpiekandula, K. Youcef-Toumi "Integrated Design and Control of Flexure-Based Nanopositioning Systems — Part II: Application Case Study" IFAC Proceedings Volumes [14746670] 44.1 (2011): 9397-9405. 10.3182/2011...	2011
Burns, D.J., Youcef-Toumi, K., Fantner, G.E., "Indirect Identification and Compensation of Lateral Scanner Resonances in Atomic Force Microscopes " Nanotechnology 08/2011; 22(31):315701. iopscience.i...	July 2011

I. Soltani Bozchalooi, K Youcef-Toumi, D J Burns and G E Fantner, "Compensator Design for Improved Counterbalancing in High Speed Atomic Force Microscopy", American Institute of Physics - Review of Scientific Instruments, 82 (2011) 113712, 12 pages. (Cited: 8) (Impact factor: 1.6) dx.doi.org/1...	November 2011
R. Ben-Mansour, M.A. Habib, A. Khalifa, K. Youcef-Toumi, D. Chatzigeorgiou. "Computational fluid dynamic simulation of small leaks in water pipelines for direct leak pressure transduction", Computers & Fluids, Volume 57, 30 March 2012, Pages 110-123. www.scienced...	March 2012
A. M. Farid, B. Jiang, A. Muzhikyan, K. Youcef-Toumi "The need for holistic enterprise control assessment methods for the future electricity grid" Renewable and Sustainable Energy Reviews [13640321] 56. (2016): 669-685. www.scienced...	September 2012
R. Ben Mansour, K. A. Suara and K. Youcef-Toumi, “Determination of Important Flow Characteristics for Leak Detection in Water Pipelines-Networks,” Computational Thermal Sciences 01/2013; 5(2):143-151. www.dl.begel...	March 2013
H. Tavakoli Nia, I. Soltani Bozchalooi, Yang Li, Lin Han, Han-Hwa Hung, Eliot Frank, Kamal Youcef-Toumi, Christine Ortiz, Alan Grodzinsky, "High-Bandwidth AFM-Based Rheology Reveals that Cartilage is Most Sensitive to High Loading Rates at Early Stages of Impairment", Biophysical Journal, 104 (2013) 1529-1537. (Cited: 12), (Impact factor: 3.976). Appeared in MIT-News and Science Daily. dspace.mit.e...	April 2013
Ajay Deshpande, Sanjay E. Sarma, Kamal Youcef-Toumi, Samir Mekid “Optimal coverage of an infrastructure network using sensors with distance-decaying sensing quality” Automatica 11/2013; 49(11):3351-3358. www.scienced...	November 2013
Farid, Amro, Apoorva Santhosh, and Kamal Youcef-Toumi. "The impact of storage facility capacity and ramping capabilities on the supply side economic dispatch of the energy–water nexus" Energy 66. (2014): 363-377. www.scienced...	March 2014
Apoorva Santhosh, Amro M. Farid, Kamal Youcef-Toumi “Real-time economic dispatch for the supply side of the energy-water nexus”, Applied Energy (Impact Factor: 5.26). 06/2014; 122:42–52. www.research...	May 2014
Dalei Wu ; Dimitris Chatzigeorgiou ; Kamal Youcef-Toumi ; Samir Mekid ; Rached Ben-Mansour. “Channel-Aware Relay Node Placement in Wireless Sensor Networks for Pipeline Inspection”, IEEE Transactions on Wireless Communications, Volume: 13, Issue: 7, pas. 3510 - 3523. ieeexplore.i...	July 2014
B.S. Yilbas, M. Khaled, N. Abu-Dheir, N. Al-Aqeeli, S.A.M. Said, A.O.M. Ahmed, K. K. Varanasi, K. Youcef-Toumi, “Wetting and Other Physical Characteristics of Polycarbonate Surfaces Textured using Laser Ablation", Applied Surface Science, 2015. Volume 320, 30 November 2014, Pages 21–29 www.research...	September 2014
I. Soltani Bozchalooi, and Kamal Youcef-Toumi, "Multi-Actuation and PI Control: A Simple Recipe for High-Speed and Large-Range Atomic Force Microscopy", Ultramicroscopy 146 (2014): 117-124. dx.doi.org/1...	November 2014
Reshma Francy, Amro M. Farid, Kamal Youcef-Toumi “Event triggered state estimation techniques for power systems with integrated variable energy resources” , ISA Transactions, 56:165-72 (Impact Factor: 2.26). 11/2014. www.ncbi.nlm...	November 2014
Chatzigeorgiou, Dimitris, Kamal Youcef-Toumi, and Rached Ben- Mansour. “Design of a Novel In-Pipe Reliable Leak Detector.” IEEE/ASME Transactions on Mechatronics, 2015, volume: 20, Issue: 2, pp.824-833. ieeexplore.i...	2015
Youcef-Toumi, K., Shapiro, B., Adhikari, R., Driggers, J., Kissel, J., et al. "Noise and control decoupling of Advanced LIGO suspensions" Classical and Quantum Gravity [02649381] 32.1 (2015): 015004. iopscience.i...	January 2015
Youcef-Toumi, Kamal, Kissel, Jeffrey, Mavalvala, Nergis, Shapiro, Brett, Strain, Kenneth. "Limitations of Underactuated Modal Damping for Multistage Vibration Isolation Systems" Mechatronics, IEEE-ASME Transactions on [10834435] 20.1 (2015): 393-404. ieeexplore.i...	February 2015
Youcef-Toumi, Kamal, Tavakoli Nia, Hadi, Han, Lin, Soltani Bozchalooi, Iman, Roughley, Peter, et al. "Aggrecan Nanoscale Solid–Fluid Interactions Are a Primary Determinant of Cartilage Dynamic Mechanical Properties" ACS Nano [19360851] 9.3 (2015): 2614-2625. pubs.acs.org...	March 2015
Aramazd Muzhikyan, Amro M. Farid, Kamal Youcef-Toumi, “An Enterprise Control Assessment Method for Variable Energy Resource-Induced Power System Imbalances—Part II: Methodology” , IEEE Transactions on Industrial Electronics 01/2015; 62(4): 2459-2467. ieeexplore.i...	April 2015
D. Wu, D. Chatzigeorgiou, K. Youcef-Toumi, R. Ben-Mansour "Node Localization in Robotic Sensor Networks for Pipeline Inspection" IEEE Transactions on Industrial Informatics [15513203] 12.2 (2015): 809-819. ieeexplore.i...	June 2015
Youcef-Toumi, Kamal, Schuh, Andreas, Bozchalooi, Iman, Rangelow, Ivo. "Multi-eigenmode control for high material contrast in bimodal and higher harmonic atomic force microscopy" Nanotechnology [09574484] 26.23 (2015): 235706. iopscience.i...	June 2015
Aramazd Muzhikyan, Amro M. Farid, Kamal Youcef-Toumi, "Relative merits of load following reserves & energy storage market integration towards power system imbalances", International Journal of Electrical Power & Energy Systems, Volume 74, Pages 222-229, ISSN 0142-0615. www.scienced...	August 2015
B. Jiang, A. M. Farid, K. Youcef-Toumi "Demand side management in a day-ahead wholesale market: A comparison of industrial & social welfare approaches" Applied Energy [03062619] 156. (2015): 642-654. amfarid.scri...	September 2015
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Yip Fun Yeung, Alex Paul-Ajuwape, Farida Tahiry, Furokawa Mikio, Hirano Takayuki, Kamal Youcef-Toumi, RoSA:A Mechatronically Synthesized Dataset for Rotodynamic System Anomaly Detection, in 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2022.	2022
Xiaotong Zhang, Abdullatif Al Alsheikh, Kamal Youcef-Toumi. "Systematic Evaluation and Analysis on Hybrid Strategies of Automatic Agent Last Mile Delivery". in 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2022).	2022

Y. F. Yeung*, F. Xia, J. Covarrubias, M. Furokawa, T. Hirano, and K. Youcef-Toumi, “Robotic condition synthesis of rotary machines: Method and instrument,” in IEEE International Conference on Robotics and Automation (ICRA), 2022	2022
Fangzhou Xia, Morgan P Mayborne, Qiong Ma and Kamal Youcef-Toumi "Physical Intelligence in the Metaverse: Mixed Reality Scale Models for Twistronics and Atomic Force Microscopy." 2022 IEEE/ASME International Conference on Advanced Intelligent Electronics (AIM)	2022
Meng, K., Youcef-Toumi, K, Jiang, B. &. Alrished, M. Toward smart scatterometry: merging intelligent computation with nanoscale metrology In Preparation	2022
Meng, K., Youcef-Toumi, K, Jiang, B., & Alrished, M. Efficient global sensitivity optimization for simultaneous scatterometry of multi-parameter thin film nanostructure In Preparation	2022
C. Yang and K. Youcef-Toumi. Linearizing Hysteresis and Creep Effects in Piezoelectric Nanopositioners via Charge Control: A Comprehensive Review.	March 2022
Ali Alshehri, Mikio Furokawa, Takayuki Hirano, Kamal Youcef-Toumi, “RF Sensing Modes for Non-Invasive Faults Diagnosis of Rotating Shafts”. In Preparation	May 2022
F. Xia, M. P. Mayborne, Q. Ma, K. Youcef-Toumi "Physical Intelligence in the Metaverse: Mixed Reality Scale Models for Twistronics and Atomic Force Microscopy" IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM) . (2022): 1722-1729. Print. 10.1109/AIM5...	July 2022
Y. F. Yeung, A. Paul-Ajuwape, F. Tahiry, M. Furokawa, T. Hirano, K. Youcef-Toumi "RoSA:A Mechatronically Synthesized Dataset for Rotodynamic System Anomaly Detection" IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 1924. (2022): 2642-2649. Print. 10.1109/IROS...	October 2022
X. Zhang, A. A. Alsheikh, K. Youcef-Toumi "Systematic Evaluation and Analysis on Hybrid Strategies of Automatic Agent Last-mile Delivery" IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) . (2022): . Print. 10.1109/IROS...	October 2022
S. Mbakop, G. Tagne, A. Lagache, K. Youcef-Toumi, R. Merzouki "Integrated design of a bio-inspired soft gripper for mushrooms harvesting" IEEE International Conference on Soft Robotics (RoboSoft) . (2023): . Print. 10.1109/ROBO...	April 2023
"Time Delay based Neural Network Control for Systems with State-Dependent Nonlinearity", Abhishek Patkar, Kamal Youcef Toumi, submitted to ACC 2022.	May 2023
Y. F. Yeung*, F. Xia, J. Covarrubias, M. Furokawa, T. Hirano, and K. Youcef-Toumi, “Robotic method and instrument to efficiently synthesize faulty conditions and mass-produce faulty conditioned data for rotary machines,” in IEEE International Conference on Robotics and Automation (ICRA), 2023. ieeexplore.i...	May 2023
Y. F. Yeung, F. Xia, J. Covarrubias, M. Furokawa, T. Hirano, K. Youcef-Toumi "Robotic Method and Instrument to Efficiently Synthesize Faulty Conditions and Mass-Produce Faulty-Conditioned Data for Rotary Machines" IEEE International Conference on Robotics and Automation (ICRA) . (2023): . Print. 10.1109/ICRA...	May 2023
X. Yang, O. Lakhal, A. Belarouci, K. Youcef-Toumi, R. Merzouki "Experimental Workflow Implementation for Automatic Detection of Filament Deviation in 3D Robotic Printing Process" IEEE International Conference on Robotics and Automation (ICRA) . (2023): 12309-12315. Print. 10.1109/ICRA...	May 2023
A. Patkar, Q. Meng, H. Wang, K. Youcef Toumi "Time Delay based Neural Network Control for Systems with State-Dependent Nonlinearity" American Control Conference (ACC) 1. (2023): 246-251. Print. 10.23919/ACC...	May 2023
J. Qiu, H. Kim, F. Xia, K. Youcef-Toumi "Multi-axis Active Vibration Suppression for Wafer Transfer Systems" IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM) . (2023): . Print. 10.1109/AIM4...	June 2023
J. Qiu†, H. Kim†, F. Xia*, and K. Youcef-Toumi, “Multi-axis active vibration suppression for wafer transfer systems,” in IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM), 2023. www.research...	June 2023
"How Does Perception Affect Safety: New Metrics and Strategy". Xiaotong Zhang, Jinger Chong, Kamal Youcef-Toumi. Submitted to ICRA 2024. arxiv.org/ab...	December 2023
"Human Gaze Prediction with EMG sensors". To be submitted	2024
"Relevance for Proactive Assistance in Human Robot Collaboration". To be submitted to RAL and IROS 2024.	2024
X. Zhang, J. Chong and K. Youcef-Toumi, "How Does Perception Affect Safety: New Metrics and Strategy," 2024 IEEE International Conference on Robotics and Automation (ICRA), Yokohama, Japan, 2024, pp. 13411-13417, doi: 10.1109/ICRA57147.2024.10610657. ieeexplore.i...	May 2024
X. Zhang, J. Chong, K. Youcef-Toumi "How Does Perception Affect Safety: New Metrics and Strategy" IEEE International Conference on Robotics and Automation (ICRA) 2. (2024): 13411-13417. Print. 10.1109/ICRA...	2024
A. Patkar, D. Liu, Y. Wang, K. Y. Toumi "Magnetic Flux Map Acquisition Using a Compressed Sensing Method" IEEE Conference on Industrial Electronics and Applications (ICIEA) . (2024): 1-6. Print. 10.1109/ICIE...	2024
"Planner with Human Motion Prediction Uncertainty". To be submitted to IROS 2024.	-
3D Technorganic Nanoprinting Via Molecular Self-Assembly	-
Tyler Okamoto and Kamal Youcef-Toumi. “Design of an Omnidirectional Soft Tactile Sensor with Applications in Leak Detection” In Preparation	-
Y-F. Yeung, A. Paul-Ajuwape, F. Tahiry, M. Furokawa, H. Takayuki, K. Youcef-Toumi, "GPAD: A Synthetic Time-Series General-Purpose Anomaly Dataset in Physical Domain," in the IEEE International Conference on Robotics and Automation (ICRA), 2022.	-
Ian Tracy, Ali Alshehri, Alison Lenhard, Kamal Youcef-Toumi, “Reciprocating Shaft Anomaly Detection via Embedded High-Temperature Rare Earth Magnets”. In Preparation	-
Xiaotong Zhang, Abdullatif Al Alsheikh, Kamal Youcef-Toumi. Computer vision for symbiotic human robot collaboration, targeting IROS 2023	-
Xiaotong Zhang, Kamal Youcef-Toumi. Motion prediction. Targeting IROS 2023	-
Xiaotong Zhang, Kamal Youcef-Toumi. Dynamic motion planning. Targeting IROS 2023/ICRA 2024	-
Tohme, T., and Youcef-Toumi, K., 2023, On Symbolic Regression and Applications (in progress)	-
Xiaotong Zhang, Abdullatif Al Alsheikh, Kamal Youcef-Toumi. Computer vision analysis, targeting IROS 2023	-

Other major publications

Publication Name and Url	Document	Publication Date
Youcef-Toumi, Kamal, “Adaptable and Modular Fixtures for Flexible Manufacturing Systems,” Laboratory for Manufacturing and Productivity, Collegium Newsletter, May 1986.		May 1986
Youcef-Toumi, K., Book Review of Teleoperation and Robotics: Evolution and Development by Jean Vertut and Philippe Coiffet, in Robot Technology, Volume 3A (Englewood Cliffs, NJ:Prentice Hall, 2986), in Applied Mechanics Reviews, Volume 40, Number 6, Part 1, June 1987, published by the American Society of Mechanical Engineers.		June 1987
Youcef-Toumi, K., Book Review of Adaptive Control of Robot Manipulators by John J. Craig, to appear in International Journal of Robotics and Computer-Integrated Manufacturing, 1988.		January 1988
Youcef-Toumi, K., “Design and Control of Direct-Drive Manipulators: A Survey,” Robotics Review, MIT Press, 1988.		January 1988
Youcef-Toumi, K. and H. Kazerooni, editors, Robotics Research. Symposium Volume of the Winter Annual Meeting of the American Society of Mechanical Engineers, December 1988.		December 1988
Youcef-Toumi, K. and H. Kazerooni, editors, Robotics Research. Symposium Volume of the Winter Annual Meeting of the American Society of Mechanical Engineers, December 1989.		December 1989
Kubota, T. and K. Youcef-Toumi, “Limitation of Linear Controllers for Precision Magnetic Bearings with Uncertainties", Proceeding of the 1998 American Control Conference, submitted for publication		1998
Ye, Y. and K. Youcef-Toumi, “Similarity Transforms in the Synthesis of Nondissipative Systems,” Proceeding of the 1998 American Control Conference, submitted for publication.		1998
Youcef-Toumi, K., “Review of Model Reference Adaptive Control Paper,”in Robotics Review, MIT Press, 1991.		June 2009
Yeh, T.-J. and K. Youcef-Toumi, “Adaptive Control of Nonlinear, Uncertain Systems Using Local Function Estimation,” The ASME Journal of Dynamic Systems Measurement and Control. Under Review		-
Yeh, T.-J. and K. Youcef-Toumi, ‘Modeling and Control of Magnetically Levitated Rotating Machines,” ASME Journal of Dynamic Systems Measurement, and Control. Submitted for Publication		-
Yeh, T.-J. and K. Youcef-Toumi, “Achievable Performance of Magnetically Levitated Rotating Machines,” ASME Journal of Dynamic Systems Measurement and Control. Submitted for Publication		-
Chang, W.-S. and K. Youcef-Toumi, “Modeling of an Omni-Directional High Precision Friction Drive Positioning System,” Proceeding of the IEEE 1998 International Conference on Robotics and Automation. Submitted for Publication		-
Huang, S.-Y. and Youcef-Toumi, K. “Explicit Fields and their Application to Structural Property Inspection of Physical Systems,” ASME Journal of Dynamic Systems and Control. To be Submitted for Publication		-
Ohara, T. and K. Youcef-Toumi, “A New High Precision Position Measurement System with Scanning Tunneling Microscope Technology,” ASME Journal of Dynamic Systems and Control. To be Submitted for Publication		-

Internal memoranda and progress reports

Publication Name and Url	Publication Date
1. Youcef-Toumi, K., H. Asada, and A. Fields, “Flexible Fixturing using a Robot Manipulator: Flexible Fixturing and Automated Drilling of Sheet Metal Parts Using a Robot Manipulator.” Second Report Covering Period October 1, 1985 to December	January 1985
2. Asada, H., K. Youcef-Toumi, and A. Field, “Flexible Fixturing using a Robot Manipulator: The Design of Adaptable Fixtures for Sheet Metal Machining.” First report covering period July 1, 1985 to September 30, 1985. Progress Report sub- mitted to the National Bureau of Standards.	July 1985
3. Youcef-Toumi, K., H. Asada, and W. S. Liu, “Computer-Aided Analysis of Reconfigurable Sheet Metal Fixturing system for Robotic Drilling,” Third Report covering period January 1, 1986 to March 31, 1986. Progress Report submitted to the National Bureau of Standards.	January 1986
4. Youcef-Toumi, K., Y. Wang, and H. Schwartz, “System Identification and Control of a Direct-Drive Robot,” Progress Report submitted to Shin Meiwa Industry Co., Ltd., Japan, March 1986.	March 1986
5. Youcef-Toumi, K. and H. Nagano, “Drive Systems of Robot Manipulators.” Progress report submitted to Matsushita Electric Company, Japan, June 1986.	June 1986
6. Youcef-Toumi, K. and D. Li, “Force Control of Direct-Drive Manipulators for Surface Following.” Report submitted to Shin Meiwa Industry Co., Ltd., Japan, June 1986.	June 1986
7. Youcef-Toumi, K. and N. Goldfine, “Laser Cutting System Design and Control.” Progress report submitted to Tensiodyne Corporation, December 30, 1986.	December 1986
8. Youcef-Toumi. K. and I.P. Ro, “Design and Control Issues in Dual Direct-Drive Motors,” Progress Report submitted to Shin Meiwa Industry Co., Ltd., Japan, January 1987.	January 1987
9. Youcef-Toumi, K. and H. Schwartz, “Offline and Online Identification and Control of Dynamic Systems.” Progress Report Submitted to Shin Meiwa Industry Co., Ltd., Japan, January 1987.	January 1987
10. Youcef-Toumi, K. and A.T.Y. Kuo, “High Speed Trajectory Control of Direct-Drive Manipulators.” Report submitted to Shin Meiwa Industry Co., Ltd., Japan, June 1987.	June 1987
11. Youcef-Toumi, K. and J.J. Bausch, “Radiotherapy System Problem Definition.” Report No. 1 submitted to Varian, Radiation Division, March 17, 1988.	March 1988
12. Youcef-Toumi, K. and J. Bausch, “Sensor Review and Evaluation for Safe Motion Control.” Report No. 2 submitted to Varian Radiation Division, June 1988.	June 1988

13. Youcef-Toumi, K. and J. Bausch, “Conclusions and Recommendations for SMC System Development.” Report No. 3 submitted to Varian Radiation Division, September 1988.	September 1988
14. Youcef-Toumi, K., F. Kondo, and I. Vithiananthan, “Analysis and Control of Active Magnetic Bearings.” Report No. 1 submitted to Ebara Corporation, Japan, January 1989.	January 1989
15. Youcef-Toumi, K., J. Bausch, M. Barberi, M. Elmenshawy, and S. Wang, “Inves- tigation of Safe Motion Control for Radiotherapy Systems-FY89 Presentation No. 1.” Report submitted to Varian Radiation Division, March 1989.	March 1989
16. Youcef-Toumi, K., T. Chuang, and T. Hawkey, “Analysis and Control of Active Magnetic Bearings.” Report submitted to Ebara Corporation, Japan, May 1989.	May 1989
17. Youcef-Toumi, K., I. Vithiananthan, F. Kondo, S. Reddy, and K. Watanabe, “Implementation of Time Delay Control to Active Magnetic Bearings.” Final Report submitted to Ebara Research Corporation, Japan, September 1989.	September 1989
18. Youcef-Toumi, K., J. Bausch, M. Barberi, V. Pellicier, and S. Wang, “Investigation of Safe Motion Control for Radiotherapy Systems-Final Report.” Report submitted to Varian Radiation Division, October 1989.	October 1989
19. Youcef-Toumi, K. and D. Beck, “Application of Model Reference Control with Time Delay to the Space Shuttle Main Engine.” Report submitted to NASA Lewis Re- search Center, 1990.	January 1990
20. Youcef-Toumi, K. and S. Reddy, “Stability Analysis of Time Delay Control with Application to High Speed Magnetic Bearings.” Report submitted to Ebara Research Corporation, Japan, March 1990.	March 1990
21. Youcef-Toumi, K. and J. Gort, “Preliminary Design of a Multi-Input/Multi-Output Digital Control Board.” Report submitted to Ebara Research Corporation, Japan, March 1990.	March 1990
22. Youcef-Toumi, K. and J. Gort, “Design of a Multi-Input/Multi-Output Digital Control Board.” Report submitted to Ebara Research Corporation, Japan, June 1990.	June 1990
23. Youcef-Toumi, K., J. Bausch, V. Pellicier, R. Vidaillet, and A. De La Cruz, “Investigation of Safe Motion Control for Radiotherapy Systems-Project Review.” Report submitted to Varian Radiation Division, August 1990.	August 1990
24. Youcef-Toumi, K. and S.-T. Wu, “Input/Output Linearization Using Time Delay Control,” MIT, LMP Report No. 90-018, September 1990 ** (Outgrowth of supervised student research)	September 1990
25. Youcef-Toumi, K. and J. Bobbett, “Stability of Uncertain Linear Systems With Time Delay,” MIT, LMP Report No. 90-020, September 1990 ** (Outgrowth of supervised student research)	September 1990
26. Youcef-Toumi, K., “The Control of Systems with Unknown Dynamics Using Time Delay with Application to Robot Manipulators,” MIT, LMP Report No. 90-003	November 1990
27. Youcef-Toumi, K. and S. Reddy, “Stability Analysis of Time Delay Control With Application to High Speed Magnetic Bearings,” MIT, LMP Report No. 90-004 ** (Outgrowth of supervised student research)	November 1990
28. Youcef-Toumi, K. and J. Gort, “Design and Description of a Multi-Input/Multi- Output Digital Control Board.” Report submitted to Ebara Research Corporation, Japan, December 1990.	December 1990
29. Youcef-Toumi, K. and Y.-C. Shao, “Investigation of Safe Motion Control for Radiotherapy Systems-2D Modelling of Half Cylinder PVDF Transducer.” Report submitted to Varian Radiation Division, February 1991.	February 1991
30. Youcef-Toumi, K. and S.-T. Wu, “Robustness and Stability Analysis of Time Delay Control,” MIT, LMP Report, September 1991 ** (Outgrowth of supervised student research)	September 1991
31. Youcef-Toumi, K. and J. Gort, “A DSP-Based Digital Control Board for Multi- Axis Machines,” MIT, LMP Report September 1991. ** (Outgrowth of supervised student research)	September 1991
32. Khan,Y., K. Youcef-Toumi, and P. Kulkarni, “Modelling, Experimentation and Simulation of a Brake Aupply System,” MIT LMP Report, September 1991 ** (Outgrowth of supervised student research)	September 1991
33. Youcef-Toumi, K. and S. Reddy, “Analysis of Linear Time Invariant Systems with Time Delay,” MIT, LMP Report, September 1991. ** (Outgrowth of supervised student research)	September 1991
34. AlSaibie, Ali. "Development of a Monocular Vision Platform and Algorithm for Navigation in Confined Underwater Space." cnre.mit.edu...	2014
35. Yousef-Touimi, Kamal, and Mohamed Zribi. "Development of an Autonomous Robotic System for the Inspection of Pipelines." cnre.mit.edu...	2016
36. Erik Gest and Kamal Youcef-Toumi. “Design of Versatile and Low-Cost Shaft Sensor for Health Monitoring.” dspace.mit.e...	2019
37. Relevance-driven Decision Making for Safer and More Efficient Human Robot Collaboration arxiv.org/pd...	September 2024
38. Bayesian Intention for Enhanced Human Robot Collaboration arxiv.org/pd...	October 2024
39. Enhanced Human-Robot Collaboration using Constrained Probabilistic Human-Motion Prediction arxiv.org/pd...	October 2024
40. Relevance for Human Robot Collaboration arxiv.org/pd...	December 2024
41. Goldfine, N. and K. Youcef-Toumi, “Behavior Characterization and Control for Pulsed Laser Cutting - Part I: Behavior Characterization for Micro-Cutting of Thin Metal Plates.”	-
42. Youcef-Toumi, K. and N. Goldfine, “Behavior Characterization and Control for Pulsed Laser Cutting - Part II: Process Control using Similarity Groups.”	-

Invited lectures

Publication Name and Url	Publication Date

2. “Design and Control of Direct-Drive Manipulators,” Shin Meiwa Industry, Development Center, Japan.	July 1984
3. “Dynamic Decoupling of Manipulator Dynamics by Mass Distribution,” Kyoto University, Automation Laboratory, Japan.	July 1984
4. “Advanced Robotic Systems in Manufacturing,” Cummins Engines, Columbus, Indiana.	January 1986
5. “Automatic Planning and Reconfigurable Fixturing Systems for Sheet Metal Drilling,” Boeing Commercial Airplane Co., Artificial Intelligence Center, Seattle, Washington.	June 1986
6. “Robotics Research,” Martin Marietta Aerospace, Baltimore Division MP 405 Baltimore, Maryland.	July 1986
7. “Research Issues in Direct-Drive Technology and Flexible Fixturing,” AT&T Bell Laboratories Robotics Systems Department Holmdel, New Jersey.	July 1986
8. “Robotics Research,” Matsushita Electric. Ind., Prod. Eng. Lab, Osaka, Japan.	July 1986
9. “Design and Control of Advanced Robotic Systems,” Kyoto University, Department of Applied Mathematics and Physics, Kyoto, Japan.	July 1986
10. “Robotics Research and Flexible Automation,” Telemecanique Direction de Recherche et Development, Nanterre, France.	August 1986
11. “Robotics Research and Flexible Automation,”, Peugeot S.A., Direction de Recherche et Affaires Scientifiques, Velizy, France.	August 1986
12. “Design and Control of Advanced Manipulators,” New Jersey Institute of Technology, Newark, New Jersey.	December 1986
13. “Robotics Research” Rockwell International, Canoga Park, California.	December 1986
14. “On Line Identification and Control of Dynamic Systems,” AT&T Bell Laboratories, Robotics Systems Department, Holmdel, New Jersey.	January 1987
15. “Robotics Research,” Department of the Army, Armament Research and Development Center, Picatinny Arsenal, Dover, New Jersey.	February 1987
16. “Design and Control of Robotic Manipulators (a two-day course 8th and 9th),” NASA, Goddard Space Flight Center, Greenbelt, Maryland.	April 1987
17. "Robotics Research and Flexible Automation,” Control Data, Minneapolis, Minnesota.	June 1987
18. “Design and Control of High Speed Direct-Drive Manipulators,” Boston Computer Society, Boston, Massachusetts.	October 1987
19. “Design and Control of High Speed Direct-Drive Manipulators,” Clemson University, Clemson, South Carolina.	November 1987
20. “Design and Control of High Speed Direct-Drive Manipulators,” Syracuse University, Syracuse, New York.	December 1987
21. “Design and Control of High Performance Robots for Manufacturing Automation,” California State University at Northridge.	December 1987
22. "Advanced Robotics,” The Federation of Finnish Mechanical and Engineering Industries Technology Development Center, TEKES, Helsinki, Finland.	February 1988
23. “Analysis: Design and Control of High-Speed Direct-Drive Manipulators,” University of Cincinnati, Cincinnati, Ohio.	February 1988
24. “Robotics: An Introductory Course,” NASA, Goddard Space Flight Center, Greenbelt, Maryland. (a 2 day course 21st and 22nd)	March 1988
25. “Robotics: An Advanced Course,” NASA, Goddard Space Flight Center, Greenbelt, Maryland. (a 2 day course 23rd and 24th)	March 1988
26. “Control of Systems with Unknown Dynamics,” Bosch, Stuttgart, West Germany.	July 1988
27. “Design and Control of Robot Manipulators,” Haut Commissariat a la Recherche, Algiers, Algeria. (a course 16th to 20th)	July 1988
28. “Robotics Research,” Federal Economic Trade Commission, Vienna, Austria.	August 1988
29. “Design and Control of High Speed Manipulators,” University of Texas at Austin, Austin, Texas.	December 1988
30. “Design and Control of High Speed Manipulators,” University of Connecticut, Storrs, Connecticut.	February 1989
31. “Modelling and Control of Dynamic Systems,” Haut Commissariat a la Recherche, Algiers, Algeria.	July 1989
32. “Control of Systems with Unknown Dynamics,” NASA Lewis Research Center, Cleveland, Ohio.	August 1989
33. “Control of Systems with Unknown Dynamics,” Presentation to Dr. Eric Bloch, Director of NSF.	September 1989
34. “Control of Systems with Unknown Dynamics-A Step Towards Intelligent Control,” MIT Smart Machines Symposium.	October 1989
35. “Design and Control of High Performance Manipulators,” Princeton University.	November 1989

36. “Control of Systems with Unknown Dynamics-A Step Towards Intelligent Control,” Carnegie Mellon University.	February 1990
37. “Control of Systems with Unknown Dynamics-A Step Towards Intelligent Control,” ALCOA Laboratories.	February 1990
38. “Control of Systems with Unknown Dynamics-A Step-Towards Intelligent Control,” Shin Meiwa Industries, Osaka Japan.	July 1990
39. “Control of Systems with Unknown Dynamics-A Step-Towards Intelligent Control,” Matsushita Electric Industrial Co., LTD, Osaka Japan.	July 1990
40. “Control of Systems with Unknown Dynamics-A Step Towards Intelligent Control,” NipponDenso Co., LTD, Kariya Japan.	July 1990
41. “Control of Systems with Unknown Dynamics-A Step Towards Intelligent Control,” Nippon Telegraph and Telephone Corporation, Tokyo Japan.	July 1990
42. “Control of Systems with Unknown Dynamics-A Step Towards Intelligent Control,” Ebara Research Corporation Co., LTD., Fujisawa Japan.	July 1990
43. “Control of Systems with Unknown Dynamics-A Step Towards Intelligent Control,” University of Rhode Island, Kingston, Rhode Island.	October 1990
44. “Control of Systems with Unknown Dynamics-A Step Towards Intelligent Control,” Digital Equipment Corporation, Colorado Springs.	December 1990
45. “Time Delay Control: Theory and Applications,” Philips Research Laboratories, New York.	November 1991
46. “Fast Adaptive Control Algorithms In Precision Motion Control Systems,” NipponDenso Co., LTD, Kariya, Japan.	March 1992
47. “Fast Adaptive Control Algorithms In Precision Motion Control Systems,” Toyota Motor Corporation, Toyota, Japan.	March 1992
48. “Fast Adaptive Control Algorithms In Precision Motion Control Systems,” Keio University, Yokohama, Japan.	March 1992
49. “Fast Adaptive Control Algorithms In Precision Motion Control Systems,” Kodak, Yokohama, Japan.	March 1992
50. “Fast Adaptive Control Algorithms In Precision Motion Control Systems,” PSA Peugeot Citroen, Direction des Recherches et Affaires Scientifiques, Velizy, France.	July 1992
51. “Fast Adaptive Control Algorithms In Precision Motion Control Systems,” Societe Nationale D’ Etude et de Construction de Moteurs d’ Aviation, Villaroche, France.	July 1992
52. “Fast Adaptive Control Algorithms In Precision Motion Control Systems,” Ecole Polytechnique, Montreal, Canada.	November 1992
53. “Fast Adaptive Control Algorithms In Precision Motion Control Systems,” Industrial Technology Research Institute, Hsinchu, Taiwan.	March 1993
54. “Fast Adaptive Control Algorithms In Precision Motion Control Systems,” National Cheng Kung University , Tainan, Taiwan. Keynote Speaker at the Chinese Automatic Control Conference.	March 1993
55. “Research Activities in the Robotics & Flexible Automation Laboratory,” Daewoo Corporation, Seoul, Korea.	March 1993
56. “Fast Adaptive Control Algorithms In Precision Motion Control Systems,” Ecole Centrale de Lyon, Lyon, France. Keynote Speaker at the International Congress MV2, Active Control in Mechanical Engineering.	June 1993
57. “Industry-University Relations,” Universite de Setif, Setif , Algeria. Keynote Speaker at the 1ere Rencontre Nationale des Realizations Appliquees a L’Industrie.	June 1993
58. “Mechatronic Systems,” Intensive course, Daewoo Corporation, Seoul, Korea. (26th to 30th)	July 1993
59. “Design and Control Integration for Precision Electromechanical Systems,” Wayne State University, Detroit, Michigan.	March 1994
60. “Design and Control Integration for Precision Electromechanical Systems,” IEEE, Boston Chapter, Cambridge, Massachusetts.	April 1994
61. “Design and Control of Two Dimensional Linear Motors,” ShinMaywa Industries, Osaka Japan.	July 1994
62. “Design and Control Integration for Precision Electromechanical Systems,” MITI, Tsukuba, Japan.	July 1994
63. “Design and Control Integration for Precision Systems,” U.S. Advanced Research Projects Agency ((ARPA), Washington, DC.	July 1994
64. “Modeling of Physical Systems,” Toyota Motor Corporation, Toyota, Japan.	July 1994
65. “Design and Control of Two Dimensional Linear Motors,” Matsushita Electric Industrial Co., LTD, Osaka Japan.	July 1994
66. “Design and Control Integration for Precision Systems,” Clemson University, Clemson, SC.	September 1994
67. “Design and Control Integration for Precision Systems,” Worcester Polytechnic Institute, Worcester, MA.	April 1995
68. "High Density Memory and Precision Sensing and Actuation”, Daewoo Electronics, Co., Seoul, Korea.	August 1996
69. "Micro-Analysers for Home Automation and Health care”, Daewoo Electronics, Co., Seoul, Korea.	August 1996
70. "Modeling Design and Control Integration”, INHA University, Inchon, Korea.	August 1996

71. "Micro-Analysers for Home Automation and Health care", Sharp Corporation, Nara, Japan.	August 1996
72. "Atomic Resolution Systems", Sharp Corporation, Nara, Japan.	August 1996
73. "Design and Control Integration for Precision Electromechanical Systems", Mitsubishi Electric, Osaka, Japan.	August 1996
74. "Micro-Analysers for Home Automation and Health care", Mitsubishi Electric, Osaka, Japan.	August 1996
75. "Micro-Analysers for Home Automation and Health care", Mitsubishi Electric, Osaka, Japan.	August 1996
76. "Micro-Analysers for Home Automation and Health care", Sanyo Electric, Osaka, Japan.	August 1996
77. "Design and Control Integration for Precision Electromechanical Systems", Matsushita Electric Works, Osaka, Japan.	August 1996
78. "Micro-Analysers for Home Automation and Health care", Matsushita Electric Works, Osaka, Japan.	August 1996
79. "Design and Control Integration for Precision Electromechanical Systems", Sanyo Electric, Osaka, Japan.	August 1996
80. "Design and Control Integration for Precision Systems," The Robotics and Robot Vision Workshop, Brisbane, Australia.	August 1996
81. "Modeling, Design, and Control Integration: A Necessary Step in Mechatronics," University of California, Berkeley, California.	November 1996
82. "Modeling, Design, and Control Integration: A Necessary Step in Mechatronics," Northeastern University, Boston, Massachusetts.	February 1997
83. "Modeling, Design, and Control Integration: A Necessary Step in Mechatronics," Japan-USA Workshop on Integration of Research and Education in Systems, Computation, and Control Engineering, Hanoi, Vietnam.	May 1998
84. "Modeling and Simulation of Multi-disciplinary Systems," ABB, Milan, Italy.	December 1999
85. "Modeling, Design and Control of Automotive Systems," FIAT, Turin, Italy.	December 1999
86. "Mechatronics Research," Electricite de France, Paris, France.	June 2000
87. "Modeling, Design and Control of Electrical and Hybrid Vehicles," PSA Peugeot-Citroen, Paris (Velizy-Villacoublay), France.	June 2000
88. "Modeling and Simulation of Multidisciplinary Engineering Systems," Fabrimetal, Brussells, Belgium.	June 2000
89. "Nanotechology," Fabrimetal, Brussells, Belgium.	June 2000
90. "Robotics and Automation," Fabrimetal, Brussells, Belgium.	June 2000
91. "Control System Design with Applications to Engineering Systems," Fabrimetal, Brussells, Belgium.	June 2000
92. "Mechatronics Research," Laboratoire d'Automatique de Besancon, UMR CNRS, Institut de Productique, Besancon, France.	June 2000
93. "Mechatronics Research," Mars Co., Slough, England.	January 2001
94. "Mechatronics Research," Thomson Co. (Now Thales), Paris, France.	January 2001
95. "Distance Learning" L'Universite Virtuelle: Defi au Troisieme Millenaire, Algiers, Algeria.	March 2001
96. "Robotics", Suffolk University, Boston, Ma, USA.	April 2001
97. "Macro to Nano Robotics: Concepts & Applications", ENSI Bourges,France	September 2001
98. Graduation Speaker, Ecole D'Ingenieur, Bourges, France.	September 2001
99. "Imaging at the Nanoscale", Texas A & M University, College Station, Texas, USA.	November 2001
100. "Impact of Electronics & Informatics in Mechanical Engineering", EMP, Algiers, Algeria.	December 2001
101. "Software: The Digital Divide" Arab Science and Technology Foundation, Dubai, United Arab Emirates.	March 2002
102. "Impact of Information technology", Constantine, Algeria.	April 2002
103. "Robotique: Applications dans la Nanotechnologie & Biotechnologie", Constantine, Algeria.	April 2002
104. "Macro to Nano Robotics: Concepts & Applications" Nanyang Technological University, Singapore.	November 2002

105. ”Industrial Information Technology”, Dubai, United Arab Emirates.	December 2002
106. ”Robotics and Automation: Concepts & Applications” Laboratoire de Robotique, Velizy, France.	April 2003
107. ”Industry & Academic Partnerships”, Entrepreneurship Conference, Dubai, United Arab Emirates.	March 2004
108. ”Robotics and Automation” , Petroleum Institute , Abu Dhabi, United Arab Emirates.	April 2005
109. ”Metrology Challenges for Micro/Nano Manufacturing ”, Tsinghua University, Beijing, China.	March 2006
110. ”Metrology Challenges for Micro/Nano Manufacturing ”, Shanghai Jiao Tong University, Shanghai, China.	March 2006
111. ”Robotics and Automation”, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia.	April 2006
112. ”Design Education at MIT’s Mechanical Engineering Department”, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia. (11th and 12th)	April 2006
113. "Fostering Practice of Design & Entrepreneurship”, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia. (11th and 12th)	April 2006
114. ”Control Systems: Theory and Applications”, Ecole Centale Lille, Lille, Fance.	June 2006
115. "Global Trends in Manufacturing and The Singapore-MIT Alliance (SMA) Experience”, Ho Chi Minh City University of Technology, Ho Chi Minh City, Vietnam.	July 2006
116. ”Macro to Nano Robotics”, King’s College London, London, United Kingdom.	July 2006
117. ”Design Education at MIT’s Mechanical Engineering Department”, Ecole Polytechnique Universitaire de Lille, France,	June 2007
118. ”Information & Communication technologies: A Necessity”, Damascus, Syria.	October 2007
119. ”On Mechatronics: Theory & Applications”, Mitsubishi Electric Corp., Osaka, Japan.	January 2008
120. ”Future Directions in Automatic Control Systems”, Mitsubishi Electric Corp., Nagoya, Japan.	January 2008
121. ”Thoughts on our Era and Technology”, Sharjah University, United Arab Emirates, WOSPA 2008. IEEE	March 2008
122. ”On Imaging at the Nanoscale” Plenary Talk - IEEE International Workshop on Signal Processing and its Applications, Sharjah, UAE. March 18-20, 2008. (Paper authored with Daniel J. Burns, Vijay Shilpiekandula, Bernardo Aumond)	March 2008
123. ”Applications in Robotics & Controls”, United Arab Emirates University, Al Ain, United Arab Emirates.	March 2008
124. ”Applications in Robotics & Controls”, Ecole Centrale de Lille, Lille, France.	March 2008
125. ”Robotics & Controls”, Schlumberger, Cambridge, MA, USA	April 2008
126. ”Applications in Robotics and Controls”, Annaba, CISA 2008, Plenary, Algeria	June 2008
127. ”Robotics, Automation & Controls”, Samsung Electronics, Co., Korea.	August 2008
128. ”Applications in Robotics & Controls ”, Universite dEvry-Val dEssonne, France.	December 2008
129. "Innovation & Entrepreneurship" , Innovation Workshop, KFUPM, Saudi Arabia. (19th-20th)	April 2009
130. ”Applications in Robotics and Controls”, Penn State Hershey Cancer Institute, Hershey, PA.	May 2009
131. ”Mechatronics at MIT”, Ecole Polytechnique Universitaire de Lille, France.	May 2009
132. Plenary talk, Algiers, Algeria.	November 2009
133. ”Design & Control Integration”, Plenary talk. IEEE International Symposium on Mechatronics and its Applications, Sharjah, United Arab Emirates. (April 20-21)	April 2010
134. “High Speed Atomic Force Microscopy”, National Instruments – NI Week., Austin, Texas.	August 2010
135. Graduation Speaker, Ecole Polytechnique de Lille, France.	October 2010
136. “Competitiveness and Knowledge Challenges of the New World Economy”, Industrial Investment Conference, Ras Al Khaimah, UAE.	November 2010
137. “On Research and Graduate Education”, Ecole Polytechnique de Lille, France.	November 2010
138. “International Partnerships”, Lecture, Algiers, Algeria.	December 2010
139. “High Speed Imaging at the Nano-Scale” , Plenary Speaker at Mechatronik 2011 Dresden, Dresden, Germany. (March 31 - April 4)	March 2011

140. ”Economic Development based on R & D and Education ”, National Instruments Academic Day, Beirut, Lebanon.	May 2011
141. ”High Speed Imaging at the Nanoscale”, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia.	May 2011
142. ”Economic Development based on Research, Development and Education”, Centre de Development des Technologies Advencees (CDTA), Algeirs, Algeria.	June 2011
143. ”Imaging at the nanoscale”, Centre de Development des Technologies Advencees (CDTA), Algeirs, Algeria.	June 2011
144. ”Robotics & Automation: Applications and Challenges”, Centre de Development des Technologies Advencees (CDTA), Algeirs, Algeria.	June 2011
145. ”Making the Impossible Possible”, Universite d’ete, Tlemcen, Algeria. Plenary lecture.	July 2011
146. ”A Nation’s Progress Through Innovation and Entrepreneurship”, 2nd Meeting of Algerian Scientific Researchers Living Abroad., Algiers, Algeria.	December 2011
147. "Robotics & Automation", Samsung Techwin _ Seoul Korea	April 2012
148. "On Modeling & Control Systems-" Jacobs University - Bremen Germany	June 2012
149. "The Qatar Computer Research Institute "- Jacobs University - Bremen Germany	June 2012
150. "High Speed Imaging at the Nanoscale", Keynote Speaker, BIAMS 11, Annaba, Algeria	June 2012
151. "Robotics… Is there a limit?" Robotics Distinguished lecture- RMIT Melbourne, Australia.	September 2012
152. "Computation meets Innovation" - Robotics Distinguished lecture- RMIT ,Melbourne, Australia.	September 2012
153. "On Soft Biomimetic Fish Robots" - Plenary lecture, SIS 2012 – The 4th SPENALO International Symposium On Marine and Medical Robotics, Busan, Korea	September 2012
154. "Innovation & Entrepreneurship "- Mitsubishi Electric Co. Advanced Technology Center Osaka, Japan.	January 2013
155. "Controls, Robotics and Automation "- Mitsubishi Electric Co. Advanced Technology Center Osaka, Japan.	January 2013
156. "Innovation & Entrepreneurship" - IHI Corporation, Tokyo , Japan	January 2013
157. "Controls, Robotics and Automation", IHI Corporation, Tokyo , Japan	January 2013
158. "Innovation & Entrepreneurship " - Research Institute of Science and Technology, POSCO, Pohang, Korea	January 2013
159. "Controls, Robotics and Automation "- Research Institute of Science and Technology, POSCO , Pohang, Korea	January 2013
160. "High Speed Imaging at the Nanoscale", The Chinese University of Hong Kong	July 2013
161. "Competing in the global economy", Conférence internationale sur le Génie Electrique ICEEB’14 , Université de BISKRA, Algeria.	November 2013
162. "Seeing at the Nanoscale: Design and Control of High-Speed Imaging Systems", MIT, Mechanical Engineering Department	December 2013
163. "Multi-Agent System Transient Stability Platform for Resilient Self-Healing Operation of Multiple Micrograms", NSF Workshop The 9th Carnegie Mellon University-Electricity Conference, February 4-5, 2014. (Paper co-authored with Dr. Sergio Rivera and Prof. Amro M.Farid).	February 2014
164. "Controls, Robotics and Automation" - Al Faisal University, Riyadh, Saudi Arabia	May 2014
165. "Advances in Robotics and Automation", 12th International Congress of Mechatronics Engineering, Monterrey Mexico	May 2014
166. "Robotics and Automation" - ITESM Campus Monterrey, Mexico	May 2014
167. "Innovation & Entrepreneurship "- Al Faisal University, Riyadh, Saudi Arabia	May 2014
168. "Maneuverable in-Pipe Robots for Leak Detection ", Hong Kong University of Science and Technology, Hong Kong.	June 2014
169. "High speed imaging at the nanoscale ", Hong Kong University of Science and Technology, Hong Kong.	July 2014
170. "High speed imaging at the nanoscale," Keynote , National Instruments, Austin Texas.	August 2014
171. "Competing in the global economy", University of Laghouat, Laghouat , Algeria.	September 2014
172. "Automatic Control Systems, Instrumentation and Robotics "- Wuxi Science & Technology , Xishan-MIT Innovative Technology Symposium, Wuxi , China	November 2014
173. "Automatic Control Systems, Instrumentation and Robotics ", Institute Advanced Manufacturing Technology Chinese Academy of Sciences, Changzhou, China.	November 2014
174. "Automatic Control Systems, Instrumentation and Robotics " The Japan Steel Works, Ltd., Hiroshima, Japan Hiroshima Research Laboratory Hiroshima, Japan	November 2014
175. "Competitiveness and Economic Advancement" ICEE _ University of Boumerdes, Boumerdes, Algeria	January 2015
176. "Robotics & Automation", Tiandi-Marco, Beijing, China.	January 2015

177. "Challenge of Change", EEC-2015 Ras Al Khaimah, United Arab Emirates	March 2015
178. "Competing in a connected world", EEC-2015 Ras Al Khaimah, United Arab Emirates	March 2015
179. "Competing in a connected World", PAAET, Kuwait City, Kuwait	April 2015
180. "Competing in the global economy", University of Bejaia, Algeria.	April 2015
181. "Competing in the global economy", University of Ghardaia, Algeria	April 2015
182. "Robotics & Automation" - Skoltech, Moscow ,Russia	May 2015
183. "Advanced Manufacturing - Competitiveness and Economic Advancement" - Wuxi, China	May 2015
184. "Future of Robotics - Challenges & Opportunities", Epoch foundation - Taipei , Taiwan	July 2015
185. "Robotics and Automation" - Lecture part of the "introduction to Robotics" course, Singapore University of Technology and Design, Singapore.	July 2015
186. "Future of Robotics - Challenges & Opportunities", Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan	July 2015
187. "Future of Robotics - Challenges & Opportunities", - CP Company , Thailand	August 2015
188. "High Speed Imaging at the Nanoscale", University of Bordeaux, Bordeaux, France.	September 2015
189. "High Speed Imaging at the Nanoscale", King Abdullah University of Science and Technology, Dean's Distinguished Lecture, Saudi Arabia	November 2015
190. "Knowledge", Al-Manahij, 2015 Algerian Scholar Medal ceremony, Algiers, Algeria.	November 2015
191. "Competitiveness and Economic Advancement" Plenary Lecture - Institut de Génie Electrique et Electronique ex-INELEC. Bourdes, Algeria. December 13, 2015. icee2015.uni...	December 2015
192. "Technology and Control Systems "- Challenges & Opportunities, Robotics Lecture, Skolkovo Institute of Science and Technology (Skoltech), Moscow, Russia.	December 2015
193. "Research and Development in Robotics & Automation", Colloquium Lecture, Skolkovo Institute of Science and Technology (Skoltech), Moscow, Russia.	December 2015
194. "Competitiveness and Economic Advancement" Pfizer _ Oued Smar, Algeria	January 2016
195. "Competitiveness and Economic Advancement" Ksar-El-Boukhari, Algeria	January 2016
196. "Robotics & Automation", CNOOC, Beijing, China	January 2016
197. "High Speed Imaging at the Nanoscale", SYNFUELS China Technology Co., LTD, Beijing, China	January 2016
198. "Future of Robotics: Challenges & Opportunities", Plenary Talk, The Fourth Arab Conference on Robotics and Artificial Intelligence (4th ACR&AI), Doha, Qatar. February 14-16, 2016.	February 2016
199. "Lectures in Dynamic Systems & Control", Skolkovo Institute of Science and Technology (Skoltech), Moscow, Russia, February 26th-27th, 2016.	February 2016
200. "Future of Robotics." Ecole Polytechnique Agiers, Algeria. April 16, 2016.	April 2016
201. "High Speed Imaging at the Nanoscale", Texas A&M University, Doha, Qatar	April 2016
202. "Future of Robotics: Opportunities & Challenges", Advanced Technologies for Food Production and Processing Session, J-WAFS/ILP Food and Water Conference, MIT. April 28, 2016. ilp.mit.edu/...	April 2016
203. "High Speed Imaging at the Nanoscale", University of Sharjah-United Arab Emirates	May 2016
204. "Research & Development at MIT's Mechatronics Research Laboratory" National Grid, Beijing, China	August 2016
205. "Energy Technology Impacts on Industrial Competitiveness", Keynote speech, EFEA, Belgrade, Serbia, September 14-16, 2016	September 2016
206. "High Speed Imaging at the Nanoscale", University of Dammam, Kingdom of Saudi Arabia	October 2016
207. "Energy Technology Impacts on Industrial Competitiveness" , King Abdullah Petroleum Studies and Research Center (KAPSARC), Riyadh, Saudi Arabia	October 2016
208. "Energy Technology Impacts on Industrial Competitiveness," King Abdulaziz City for Science and Technology (KACST) Riyadh, Saudi Arabia	October 2016
209. "Robotics and Automation: Opportunities & Challenges", King Saud University, Riyadh, Saudi Arabia	October 2016
210. "The Power of Innovation", King Abdulaziz University, Jeddah, Saudi Arabia	October 2016
211. "Energy Technology Impacts on Industrial Competitiveness", Kingdom of Saudi Arabia	November 2016

212. "Robotics and Automation: Opportunities & Challenges", Keynote Speech-8th International Conference on Modeling, Identification and Control (ICMIC-2016), Algiers, Algeria. November 15-17, 2016	November 2016
213. "Energy Technology Impacts on Industrial Competitiveness", Massachusetts Institute of Technology, Boston, MA	November 2016
214. "Robotics and Automation: Opportunities & Challenges", Keynote speech - Robotics & Automation Forum 2016, The University of Western Australia, Perth, Australia	December 2016
215. "Robotics and Automation", Woodside, Perth, Australia	December 2016
216. "Robotics and Automation", ABB, Shanghai, China	December 2016
217. "Robotics and Automation", Yangpu, Shanghai, China	December 2016
218. "Robotics and Automation", Yanfeng, Shanghai, China	December 2016
219. Dynamic Systems and Control Lectures, Skolkovo Institute of Science & Technology (Skoltech), Moscow, Russia.	March 2017
220. "Robotics & Automation: Opportunities and Challenges", Global Technology Symposium at Midea. Foshan City, Guangdong, China.	May 2017
221. "Robotics & Automation: Opportunities and Challenges" Wuxi - China	October 2017
222. "Robotics & Automation: Opportunities and Challenges", The 2017 MIT China Conference. Shanghai, China. ilp.mit.edu/...	October 2017
223. "The Power of Innovation", 5th International Conference on Electrical Engineering, Keynote Speaker. Boumerdes, Algeria. icee2017.uni...	October 2017
224. "Robotics & Automation: Opportunities and Challenges", Sinomach	November 2017
225. "Robotics & Automation: Opportunities and Challenges", Skoltech, Moscow, Russia	February 2018
226. "Envisioning a Great City: Public Realm & Economic Impact", Spring Enrichment Program King Abdullah University of Science and Technology (KAUST) Saudi Arabia	April 2018
227. "Mechatronics Research Laboratory @ MIT" Government & Industry Delegation, Wuxi Xishan, China	July 2018
228. "Advanced Robotics & Manufacturing: Opportunities and Challenges" Weichai Power Co. Ltd, Weifang, China	July 2018
229. "Advanced Robotics Manufacturing: Competitiveness & Economic Advancement" GoerTek, Inc. Weifang, China	July 2018
230. "Mechatronics Research Laboratory @ MIT" Synfuels Delegation - Massachusetts Institute of Technology, Boston, MA	August 2018
231. "Mechatronics Research Laboratory @ MIT" Airbus - Massachusetts Institute of Technology, Boston, MA	September 2018
232. "The Power of Innovation" KACST, Riyadh, Saudi Arabia	September 2018
233. "Innovation and the Innovator" King Saud University (KSU) Riyadh, Saudi Arabia	October 2018
234. "Robotics & Automation: Challenges and Opportunities" King Fahd University of Petroleum and Minerals, Dhahran Saudi Arabia	October 2018
235. "Robotics & Automation: Challenges and Opportunities" CISTEM Algiers, Algeria	October 2018
236. "Energy Technology Impacts on Industrial Competitiveness", Massachusetts Institute of Technology, Boston, MA	October 2018
237. "Energy Technologies & Industrial Competitiveness", Massachusetts Institute of Technology, Boston, MA	October 2018
238. "Energy Technologies & Industrial Competitiveness", Sonatrach, Hydra, Algeria	October 2018
239. "Energy Technology Impacts on Industrial Competitiveness", Sonatrach	October 2018
240. "The Power of Innovation" KACST-MIT Ibn Khaldun Fellowship Program Effat University, Jeddah Saudi Arabia	October 2018
241. "Competing in the Global Economy" Commandement Des Forces De Defense Aerienne Du Territoire, Reghaia, Algeria	October 2018
242. "Robotics & Automation: Challenges and Opportunities" MIT Hacking Medicine, Princess Noura University, Riyadh Saudi Arabia	November 2018
243. "Robotics & Automation" Woodside	November 2018

244. "Robotics & Automation: Challenges and Opportunities" University of Evry Val d'Essonne, Evry, France	November 2018
245. "Robotics & Automation: Challenges and Opportunities" ABB, Vasteras, Sweden	December 2018
246. Keeping the Innovation Engine Running, SONATRACH, Boumerdes, Algeria	December 2018
247. "Research and Development in Robotics & Automation" Skolkovo Institute of Science and Technology, Moscow Russia	February 2019
248. "Robotics & Automation: Challenges and Opportunities" Mitsubishi Electric, Americas - Factory Automation @ MIT	February 2019
249. "Robotics & Automation: Challenges and Opportunities" Japan Steel Works, Hiroshima, Japan	February 2019
250. "Robotics & Automation: Challenges and Opportunities" Kawasaki Heavy Industries, Ltd, Kobe, Japan	February 2019
251. "Robotics & Automation: Challenges and Opportunities" Shanghai Electric, Shanghai, China	February 2019
252. "Keeping the Innovation Engine Running" University of Sharjah, Sharjah, United Arab Emirates	February 2019
253. "Envisioning a Great City: Public Realm & Economic Impact", Alyamamah University Engineering Forum,Riyadh, Saudi Arabia	March 2019
254. "Robotics & Automation: Challenges and Opportunities" University of Sharjah, Sharjah, United Arab Emirates	April 2019
255. "Robotics & Automation: Challenges and Opportunities" Universitye des sciences et de la Technologie, Oran, Algeria	April 2019
256. "Competing in the Global Economic" Universite Abdelhamid Ibn Badis Mostaganem, Mostaganem, Algeria	April 2019
257. "Competing in the Global Economic" Centre Universitaire, Ain Temouchent Algeria	April 2019
258. "Robotics & Automation: Challenges and Opportunities" Weichai @ MIT	November 2019
259. "Forces of Change in the Digital Age" Universite Des Sciences Et De La Technologie Houari Boumediane, Bab Ezzouar, Algeria	November 2019
260. "Forces of Change in the Digital Age" International Computing Conference, Princess Nourah University, Riyadh, Saudi Arabia	December 2019
261. "The Captains of Innovation" Webinar Ibn Khaldun, Kingdom of Saudi Arabia	May 2020
262. "Forces of Change in the Digital Age" WE ALGERIANS - WE EDCAMP, Keynote, Webinar	June 2020
263. "The Captains of Innovation" Tizi Ouzou University Webinar, Algeria	June 2020
"Forces of Change in the Digital Age," Saudi Arabian International Chemical Sciences Chapter - American Chemical Society Webinar	April 2021
264. "Automation and Computing" Developments in eSystems Engineering (DeSE) Conference, University of Sharjah - United Arab Emirates	December 2021
"Automation & Digital Technologies" THAKAA Initiative, AI Center for Advanced Studies, King Saud University, Saudi Arabia	February 2022
"Nanoscale Video Imaging for Dynamic Process Visualization," Abu Dhabi	March 2022
"Nanoscale Video Imaging for Dynamic Process Visualization," Stockholm, Sweden	August 2022
"An Innovation Ecosystem," Keynote - ITAS 2023, Doha, Qatar	March 2023
"Robotics, Automation & Intelligent Systems," Tetra Pak Packaging Solutions, Modena, Italy	April 2023
"Robotics, Automation & Intelligent Systems," Ferrari, Maranello, Italy	April 2023
"An Innovation Ecosystem," King Abdulaziz City of Science & Technology (KACST), Riyadh, Saudi Arabia	May 2023
"Reflections from a Scientific Journey," University of Science & Technology Oran, Algeria	May 2023
"Reflections from a Scientific Journey," University of Mostaganem, Mostaganem, Algeria	May 2023
"Automation & Computing Technologies," IEEE SoSE 2023 - 18th International Conference on Systems of Systems Engineering Keynote, Polytech Lille Villeneuve d'Ascq, France	June 2023
"Global Perspective - Towards a High-Level Society," Technology Transfer Workshop, Algiers, Algeria	June 2023
"Nanoscale High-Speed Imaging & Material Characterization," Scientist Medal Lecture - Advanced Materials Congress, Stockholm, Sweden	August 2023
"Nanoscale Video Imaging for Dynamic Process Visualization," Advanced Materials Congress, Stockholm, Sweden	August 2023
"An Innovation Ecosystem," King Abdulaziz University, Jeddah, Saudi Arabia	October 2023

"An Innovation Ecosystem," Dar Al-Hekma University, Jeddah, Saudi Arabia	October 2023
"An Innovation Ecosystem," Dhahran Techno Valley & King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia	October 2023
"An Innovation Ecosystem," King Abdulaziz City of Science and Technology, Riyadh, Saudi Arabia	October 2023
"Robotics & Computing Technologies," King Abdelaziz City of Science and Technology, Riyadh, Saudi Arabia	October 2023
"Robotics & Computing Technologies," Epoch Foundation @ MIT	October 2023
"High-Speed Nanoscale Imaging," Tufts University - Mechanical Engineering Seminar Series	December 2023
"Empowering Progress - Building a Sustainable Future for Algeria," CNRST Conference - Algiers, Algeria	December 2023
Robotics & Computing Technologies," Japan Steel Works - Hiroshima Plant - Hiroshima, Japan	December 2023
"Research & Development at MIT Mechatronics Research Laboratory," Japan Steel Works M&E - Muroran, Japan	December 2023
"Integrated Pathways: Navigating Towards a Balanced and Sustainable Future," Renewable Energy Workshop, Algiers, Algeria	December 2023
“Innovation at MIT” Universite d’Evry Val d’Essonne, Paris-Saclay Evry, France	January 2024
“Beyond Excellence: Unveiling the Transformative Impact of a Global Pioneer in Education, Innovation, and Technology” Universite d’Evry Val d’Essonne Paris-Saclay Evry, France	January 2024
“Reflections on my Scientific Journey” Universite d’Evry Val d’Essonne, Paris-Saclay Evry, France	January 2024
"High-Speed Nanoscale Imaging" Technische Universitai Ilmenau, Ilmenau, Germany	April 2024
"AI or Human Brain: Who will lead the future of Intelligence?" 2024 IEEE/ASME International Conference of Advanced Intelligent Mechatronics, Boston, MA	July 2024
"High-Speed Nanoscale Imaging" 2024 IEEE/ASME International Conference on Advanced Intelligent Mechatronics, Boston, MA	July 2024
"Robotics, Automation & Computing Technologies," Epoch Foundation (10-11th) Taipei, Taiwan	December 2024
"Entrepreneurship @ MIT 2nd International Workshop on Renewable Energies," (25-26th) Algiers, Algeria	December 2024
"Robotics, Automation & Computing Technologies," Epoch Foundation (12-13th) Bangkok, Thailand	December 2024
"Robotics, Automation & Computing Technologies," Epoch Foundation, Tokyo, Japan	December 2024
"Robotics, Automation & Computing Technologies," Epoch Foundation (12-13th) Bangkok, Thailand	December 2024
“Entrepreneurship @ MIT” 2nd International Workshop on Renewable Energies, (25-26th) Algiers, Algeria	December 2024

Patents

Serial Number	Patent Number	Patent Description	Filed Date	Issue Date	Patent Status
07/546024	5144549	”Time Delay Controlled Processes”, Inventors: Youcef-Toumi;Kamal (Newbury, MA) Assignee: Massachusetts Institute of Technology(Cambridge, MA), Filed: June 29, 1990, United States Patent5,144,549; September 1, 1992.	6/29/1990	9/1/1992	Expired
	7055528	”Applicator” Inventors: Shah; Manzoor A. (Boston, MA), Alvarado; Pablo Valdivia Y (Cambridge, MA), Youcef-Toumi; Kamal (Cambridge, MA) Assignee: Alpine Pharmaceuticals (Cambridge, MA) Filed: March 27, 2003 United States Patent 7,055,528; Issued: June 6, 2006.	March 2003	June 2006	Issued
	7099003	”Spectroscopic Systems and Methods”, Inventors: Saptari; VidiA. (Chelsea, MA), Youcef-Toumi; Kamal (Cambridge, MA) Assignee:Delta Search Labs, Inc. (Cambridge, MA) , Filed: May 6, 2004 United States Patent 7,099,003; August 29, 2006.	May 2004	August 2006	
12/425647	8210840	Vijay Shilpiekandula, Kamal Youcef-Toumi, "DIAPHRAGM FLEXURE WITH LARGE RANGE AND HIGH LOAD CAPACITY", US Patent No. 8210840	4/17/2009	7/3/2012	Granted
	8210840	”A Diaphragm Flexure With Large Range and High Load Capacity.”	4/17/2009	7/3/2012	Issued

12/785840	8347409	Daniel J Burns, Georg E Fantner, Kamal Youcef-Toumi, "RESONANCE COMPENSATION IN SCANNING PROBE MICROSCOPY", US Patent No. 8347409	5/24/2010	1/1/2013	Granted
	8390233	”A High-Resolution Flexural Stage for In-Plane Position and Out-of-Plane Pitch/Roll Alignment”	12/1/2009	3/5/2013	Issued
	US 2013/0199272 A1	Atia Khalifa, Rached Ben Mansour, Yehia Khulief, Samir Mekid, Kamal Youcef-Toumi , "In-Pipe Mobile Cross-correlation-based System for Leak Detection", US Patent No. US 2013/0199272 A1	2/2/2012	8/8/2013	Issued
	8516610 B1	“High-Frequency Rheology System Coupled to Commercial AFMs”, Investors: Hadi Tavakoli Nia, I. Soltani Bozchalooi, Yang Li, Han-Hwa Hung, Eliot Frank, Kamal Youcef-Toumi, Christine Ortiz and Alan Grodzinsky, (Cambridge, MA) Assignee: Massachusetts Institute of Technology(Cambridge, MA), Case No. 15412	3/19/2012	8/20/2013	
13/409207	8783297	Muhammad A Hawwa, Kamal Youcef-Toumi, "ROBOTIC SYSTEM FOR PIPELINE REHABILITATION", US Patent No. 8783297	3/1/2012	7/22/2014	Granted
12/425624	8795572	Vijay Shilpiekandula, Kamal Youcef-Toumi, "SYMMETRIC THERMOCENTRIC FLEXURE WITH MINIMAL YAW ERROR PROTECTION", US Patent No. 8795572	4/17/2009	8/5/2014	Granted
	8795572	”Symmetric Thermocentric Flexure with Minimal Yaw Error Motion.”	4/17/2009	8/5/2014	Issued
	8818723	”A localization and tracking system for mobile robots” Inventors: A. Schuh; K.Youcef-Toumi (Cambridge, MA)Assignee: Massachusetts Institute of Technology(Cambridge, MA), MIT case number 15182, PENDING.	8/27/2012	8/26/2014	Issued
13/082730	8820143	Rached Ben-Mansour, Dimitrios Chatzigeorgiou, Stephen Sai-Wung Ho, Sanjay E Sarma, Kamal Youcef-Toumi, "LEAK DETECTION SYSTEM", US Patent No. 8820143	4/8/2011	9/2/2014	Granted
	8820143	“Leak Detection System”, Inventors: Sanjay E. Sarma, Kamal Youcef-Toumi, Stephen S. Ho, Dimitris Chatzigeorgiou, Rached Ben Mansour (Cambridge, MA) Assignee: Massachusetts Institute of Technology(Cambridge, MA), MIT case number 14570.	4/8/2011	9/2/2014	Issued
13/355659	8869599	Rached Ben-Mansour, Dimitrios Chatzigeorgiou, Changrak Choi, Atia Khalifa, Kamal Youcef-Toumi, "LEAK DETECTION SYSTEM BASED ON FORCE TRANSDUCTION", US Patent No. 8869599	1/23/2012	10/28/2014	Granted
13/411681	9046427	Hussain A Al-Qahtani, Muhammad A Hawwa, Kamal Youcef-Toumi, "SYSTEM FOR DUAL PRESSURE SENSING", US Patent No. 9046427	3/5/2012	6/2/2015	Granted
	9,229,530	You, W. U., et al. "Wireless haptic feedback apparatus configured to be mounted on a human arm." U.S. Patent No. 9,229,530	-	1/5/2016	Issued
14/072205	9285290	Rached Ben-Mansour, Dimitrios Chatzigeorgiou, Atia Khalifa, Samir Mekid, Kamal Youcef-Toumi, "LEAK DETECTION APPARATUS", US Patent No. 9285290	11/5/2013	3/15/2016	Granted
13/854196	9321466	Rached Ben-Mansour, Dimitrios Chatzigeorgiou, Changrak Choi, Kamal Youcef-Toumi, "CONTROLLABLE NORMAL FORCE MECHANISM WITH MINIMUM ENERGY CONSUMPTION", US Patent No. 9321466	4/1/2013	4/26/2016	Granted
13/095135	9335233	Rached Ben-Mansour, Dimitrios Chatzigeorgiou, Mohamed A Habib, Atia Khalifa, Kamal Youcef-Toumi, "IN-PIPE LEAK DETECTION BASED ON PRESSURE GRADIENT", US Patent No. 9335233	4/27/2011	5/10/2016	Granted
	9335233	“In-pipe Leak Detection Based on Pressure Gradient”, Inventors: Atia Khalifa, Rached Ben-Mansour, Kamal Youcef-Toumi, Mohamed Habib, and Dimitris Chatzigeorgiou (Cambridge, MA)Assignee: Massachusetts Institute of Technology(Cambridge, MA), MIT case number 14660.	4/27/2011	5/10/2016	Issued
14/547480	9397587	Iman Soltani Bozchalooi, Andrew Careaga Houck, Kamal Youcef-Toumi, "MUTLI-ACTUATOR DESIGN AND CONTROL FOR A HIGH-SPEED/LARGE-RANGE NANOPOSITIONING SYSTEM", US Patent No. 9397587	11/19/2014	7/19/2016	Granted
14/569889	9721448	Rached Ben-Mansour, Samir Mekid, Dalei Wu, Kamal Youcef-Toumi, "WIRELESS COMMUNICATION SYSTEMS FOR UNDERGROUND PIPE INSPECTION", US Patent No. 9721448	12/15/2014	8/1/2017	Granted
	9721448	”Wireless Communication Systems for Underground Pipe Inspection”, Investors: Dalei Wu, Kamal Youcef-Toumi, Samir Mekid, Rached Ben Mansour, (Cambridge, MA) Assignee: Massachusetts Institute of Technology(Cambridge, MA), MIT case number 16059J	12/15/2019	8/1/2017	Issued
15/130083	10063374	Omaimah Omar S Bamasag, Kamal Youcef-Toumi, "SYSTEM AND METHOD FOR CONTINUOUS AUTHENTICATION IN INTERNET OF THINGS", US Patent No. 10063374	4/15/2016	8/28/2018	Granted
15/044176	10078031	Rached Ben-Mansour, Dimitrios Chatzigeorgiou, Kamal Youcef-Toumi, "COMPLIANT LEAK DETECTION SYSTEM", US Patent No. 10078031	2/16/2016	9/18/2018	Granted
15/597345	10451210	Solene Marie Ameli Demay, You Wu, Kamal Youcef-Toumi, "SOFT BODY ROBOT FOR IN-PIPE MISSIONS", US Patent No. 10451210	5/17/2017	10/22/2019	Granted
15/591593	10649072	Iman Soltani Bozchalooi, Kamal Youcef-Toumi, "A LIDAR DEVICE BASED ON SCANNING MIRRORS ARRAY AND MULTI-FREQUENCY LASER MODULATION", US Patent No. 10649072	5/10/2017	5/12/2020	Granted

16/341139	10845007	Rached Ben-Mansour, Michael A Finn-Henry, Kristina S Kim, You Wu, Kamal Youcef-Toumi, "IN-PIPE LEAK DETECTION SYSTEMS, DEVICES, AND METHODS", US Patent No. 10845007	4/11/2019	11/24/2020	Granted
17/623789	11906546	Mathias Holz, Tzvetan Ivanov, Ivo Rangelow, Christoph Reuter, Yi Wang, Fangzhou Xia, Chen Yang, Kamal Youcef-Toumi, "COATED ACTIVE CANTILEVER PROBES FOR USE IN TOPOGRAPHY IMAGING IN OPAQUE LIQUID ENVIRONMENTS, AND METHODS OF PERFORMING TOPOGRAPHY IMAGING", US Patent No. 11906546	12/29/2021	2/20/2024	Granted
		”Robotic Apparatus And Process For Pipeline Rehabilitation Inventors: Muhammad A. Hawwa and Kamal Youcef-Toumi, United States of America Serial No. 61/479523, Filed April 27, 2011.	April 2011	-	
		”An Acoustic Probe For Leak Detection In Water Pipelines, Yagoub N. Al-Nassar, Hussain Al-Qahtani, Muhammad A. Hawwa and Kamal Youcef-Toumi, United States of America Serial No. 61/485675, Filed May 13, 2011	May 2011	-	
		Disclosure: Design of an analog charge controller using a diode-based DC stabilization for piezoelectric hysteresis suppression Chen Yang, Fangzhou Xia, Yi Wang, Kamal Youcef-Toumi	9/11/2018	-	
		Disclosure: Charge based analog displacement estimation module for high performance motion control of piezoelectric actuators Date Submitted to MIT TLO: 01/23/2019, Chen Yang, Fangzhou Xia, Yi Wang, Kamal Youcef-Toumi	1/23/2019	-	
62/819,455	62/819,455	C. Yang, F. Xia, Y. Wang, S. Truncale, K. Youcef-Toumi, "Design and Control Of A Multi-Actuated Nanopositioner with Stacked Structure", US Patent No. 62/819,455	3/15/2019	-	Pending
62/870,668	62/870,668.	F. Xia, C. Yang, Y. Wang, K. Youcef-Toumi, C. Reuter, T. Ivanov, M. Holz, I. W. Rangelow, "Coated Active Cantilever Probes for use in Topography Imaging in Opaque Liquid Environments, and Methods of Performing Topography Imaging", US Patent No. 62/870,668.	7/3/2019	-	Pending
16/113,456	PCT/US2019/044305	C. Yang, F. Xia, K. Youcef-Toumi Charge Controller for Linear Operation of Piezoelectric Actuators 16/113,456 (filed Aug. 27, 2018), PCT/US2019/044305 (filed Jul. 31, 2019).	7/31/2019	-	Pending
17/508298		Ali Hamoud M AlShehri, Mikio Furokawa, Takayuki Hirano, Lois Amelia Wampler, Yip Fun Yeung, Kamal Youcef-Toumi, "MODULAR, GENERAL PURPOSE, AUTOMATED, ANOMALOUS DATA SYNTHESIZERS FOR ROTARY PLANTS", US Patent No.	10/22/2021	-	Published application
17/610984		Mikio Furokawa, Erik M Gest, Takayuki Hirano, Kamal Youcef-Toumi, "DEVICES AND METHODS FOR MONITORING HEALTH AND PERFORMANCE OF A MECHANICAL SYSTEM", US Patent No.	11/12/2021	-	Published application
		S. Y. F. Yeung, J. A. Covarrubias, F. Xia, K. Youcef-Toumi, M. Furokawa, and T. Hirano, “Multi-actuation cartesian robot to efficiently synthesize working conditions of rotordynamic plant,” 2022. MIT Invention Disclosure: 24637J	2022	-	
17/788468		Jiyoung Chang, Tyler Takeo Okamoto, Kamal Youcef-Toumi, "OMNIDIRECTIONAL SOFT CAPACITIVE TACTILE SENSORS, AND METHODS OF USING THE SAME", US Patent No.	6/23/2022	-	Published application
	US20230347582A1	Solution-based system for printing a 3d structure	6/30/2023	-	Pending
18/260925		Ali Hamoud M AlShehri, Mikio Furokawa, Takayuki Hirano, Yip Fun Yeung, Kamal Youcef-Toumi, "RADIO FREQUENCY CYBER PHYSICAL SENSING MODES FOR NON-INVASIVE FAULTS DIAGNOSIS OF ROTATING SHAFTS", US Patent No.	7/10/2023	-	Published application
63/561635		Lianming Hu, Xiaotong Zhang, Kamal Youcef-Toumi, "Eog-Imu Glasses for Free-Moving Use", US	3/5/2024	-	Pending
		“Bi-directional Leak Detection System with full Observability”, Investors: Chatzigeorgiou D., Samir Mekid, Ben-Mansour R., Khalifa A. and Youcef-Toumi K., (Cambridge, MA) Assignee: Massachusetts Institute of Technology(Cambridge, MA), Case No. 15806. Pending	-	-	Pending
		”Controllable Friction Varying Mechanism with Minimum Energy Consumption”, Inventors: C.Choi; D.Chatzigeorgiou; R.Ben-Mansour; K.Youcef-Toumi (Cambridge, MA) Assignee: Massachusetts Institute of Technology (Cambridge, MA), PENDING.	-	-	Pending
		“A MEMS / Piezoelectric System for Dual Pressure Sensing”, Inventors: Muhammad A. Hawwa, Kamal Youcef-Toumi, and Hussain M. Al-Qahtani (Cambridge, MA)Assignee: Massachusetts Institute of Technology(Cambridge, MA), MIT case number 14742. Pending	-	-	Pending
		”In-Pipe Mobile Cross-Correlation Based System for Leak Detection”, Inventors: Atia Khalifa, Yehia Khulief, Rached Ben. Mansour, Samir Mekid and Kamal Youcef-Toumi (Cambridge, MA)Assignee: Massachusetts Institute of Technology (Cambridge, MA), MIT case number 15125. Pending	-	-	Pending
		”Non-Iterative Mapping of Capped Cylidrical Environments” Inventors: C. Panas; R.Panas; K Youcef-Toumi (Cambridge, MA) Assignee: Massachusetts Institute of Technology(Cambridge, MA), PENDING.	-	-	Pending

		”A Method to Identify and Compensate for In-Plane Resonances of a Scanning Probe Microscope”, PENDING.	-	-	Pending
		”Leak and Contamination Detection Micro-Submarine for Water and Liquids Distribution System/Microelectronic Leak and Contamination Sensing Fish”, PENDING.	-	-	Pending
		”Flexure-Based Mechanism for Passive Angle Alignment and Subsequent Mechanical Locking”, PENDING.	-	-	Pending
		”Parallel-Plate Instrumentation with Clear Aperture and High-Resolution Decoupled Pitch-Roll Alignment for Programmable Small-Scale Gap”, PENDING.	-	-	Pending
	62/833,390	Meng, K., Jiang, B., Samolis, C. D., Alrished, M., Youcef-Toumi, K, Zhou, F. , "Unevenly spaced sampling techniques for analyzing samples using an ellipsometer", US Patent No. 62/833,390	-	-	Pending
		Jiang, B., Meng, K., Youcef-Toumi, K, Zhou, F. A Sample-attached Calibration Method for Mueller Matrix Ellipsometer submitted technology disclosure, MIT case 22082J	-	-	Pending
		Meng, K., Youcef-Toumi, K, Zhou, F. A High Lateral-Resolution Ellipsometer for Nano-Scale Metrology. (submitted technology disclosure, MIT case 22083J)	-	-	Pending
		Meng, K., Youcef-Toumi, K, Zhou, F. A Robust Ellipsometer with Online Calibration using Wavelength Division Multiplexing. (submitted technology disclosure, MIT case 22084J)	-	-	Pending
		Meng, K., Youcef-Toumi, K, Zhou, F. A High Accuracy Ellipsometer using Time-Division Multiplexing Online Calibration. (submitted technology disclosure, MIT case 22085J)	-	-	Pending
		You, W. U., et al. "In-pipe leak detection systems, devices, and methods." U.S. Patent Application No. 16/341,139. Published Application	-	-	Published application
		Al-Qahtani, Hussain, et al. "Acoustic probe for leak detection in water pipelines." U.S. Patent Application No. 13/412,718.	-	-	Published application
63/503932		“Robotic instrument to efficiently synthesize fault conditions for rotary machines,” 2023. US Patent App. 63/503,932.	-	-	Pending
	26163J	Fangzhou Xia, Kamal Youcef-Toumi, Malek Ibrahim, Hamoudi Hicham, "3D Printed Electro-Femtofluidic Flow Sensor", US Patent No. 26163J	-	-	Pending
	26070J	Fangzhou Xia, Kamal Youcef-Toumi, Malek Ibrahim, Hamoudi Hicham, "Molecular Self-Assembly of Carbon Nanosheets via AFM Nanoprinter", US Patent No. 26070J	-	-	Pending
		S. Y. F. Yeung, J. A. Covarrubias, F. Xia, K. Youcef-Toumi, M. Furokawa, and T. Hirano, “Method to synthesize working condition of rotordynamic plants with robots,” 2022. MIT Invention Disclosure: 24636J.	-	-	
		K. Dobson, H. Yang, K. Nan, F. Xia, K. Youcef-Toumi, and G. Traverso, “Trocar-injectable soft wireless biomedical devices,” 2022. MIT Invention Disclosure: 24368.	-	-	
		K. Dobson, H. Yang, M. Zhao, A. M. Gierlach, F. Xia, K. Nan, K. Youcef-Toumi, and G. Traverso, “Smart injection needle system for accurate characterization of cell types, concentrations, and viability,” 2022. MIT Invention Disclosure: 24367	-	-	
		"Modular, general purpose, automated, anomalous data synthesizer for rotary plants"	-	-	Pending

New Products, Processes, and Designs

Description	Start Date	End Date
A Digital-Signal Processing controller board for multi-axis machines. Sponsor and current user is Ebara Corporation in Japan under MIT’s copyright.	-	-
A computer controlled, flexible machine with multi-heads. Sponsor and current user is Pedigree Company in England for palletizing and water jet cutting applications.	-	-
A positioning system and software for high precision profilometry. Sponsor and current user is The Gillette Company in Boston.	-	-
An Ultra-high-speed Atomic Force Microscope for scanning wafers and photomasks, for Samsung Corporation.	-	-

Committee Service

Service Level	Committee Type	Committee Service Description	Start Date	End Date
School, Institute-Wide Level	Standing Faculty Committee	Curricula, Committee on (Regular)	6/15/1991	6/14/1994
School, Institute-Wide Level	Ad Hoc - Other	MIT International Programs Council - Member	6/1/2008	-
Department, Lab or Center Level	Non-Faculty Search Committee	Member of Information, Science and Technology Search Committee (Dept.)	1/2/1995	5/1/1995

Department, Lab or Center Level	Honors and Awards Committee	Mech. Eng. Honors and Awards Committee (Regular Member)	1/1/2015	-
Department, Lab or Center Level	Ad Hoc/Other Committee	Strategic Planning Committee (Regular Member)	9/1/1996	9/1/1997
Department, Lab or Center Level	Ad Hoc/Other Committee	Chairman of Construction Committee for the d'Arbeloff Laboratory (Dept.)	7/1/1995	12/1/1995
Department, Lab or Center Level	Ad Hoc/Other Committee	Member of Control Systems Curriculum Review Committee (Dept.)	2/1/1991	5/1/1991
Department, Lab or Center Level	Ad Hoc/Other Committee	Mechanical Engineering Department Research Council - Member	9/1/2005	-
Department, Lab or Center Level	Ad Hoc/Other Committee	Chairman of the Mechanical Engineering Open House Committee	9/1/1992	12/1/1992
Department, Lab or Center Level	Undergraduate Program Committee	Chairman of Undergraduate Curriculum Committee (Dept.)	9/1/1998	9/1/1999
Department, Lab or Center Level	Undergraduate Program Committee	Member of Undergraduate Curriculum Committee (Dept.)	9/1/1997	9/1/1998
Department, Lab or Center Level	Faculty Search Committee	Member of Thermal Science Search Committee (Dept.)	1/1/1993	5/1/1993
Department, Lab or Center Level	Faculty Search Committee	Member of Thermal Science Search Committee (Dept.)	11/1/1993	5/1/1994
Department, Lab or Center Level	Non-Faculty Search Committee	Member of Applied Mechanics Search Committee (Dept.)	1/1/1995	5/1/1995
Department, Lab or Center Level	Non-Faculty Search Committee	Mechanical Engineering Department Head search Committee - Member	2/1/2008	5/1/2008
Department, Lab or Center Level	Non-Faculty Search Committee	Co-chairman of Information, Science and Technology Search Committee (Dept.)	11/1/1993	5/1/1994

Other MIT Service

Service Level	Other MIT Service Description	Start Date	End Date
School, Institute-Wide Level	Manager, LMP Computing Facility	6/1/1985	6/1/1986
School, Institute-Wide Level	Lawrence Livermore National Laboratory, Faculty Liaison (Engineering Internship Program)	7/1/1998	5/1/2005
School, Institute-Wide Level	System's Manager of Robotics Group Computer Facilities (LMP)	9/1/1982	6/1/1985
School, Institute-Wide Level	Engineering Internship Program, Department Representative	7/1/2000	5/1/2005
School, Institute-Wide Level	Proctor & Gamble Co., Faculty Liaison (Engineering Internship Program)	10/1/1998	10/1/2005
School, Institute-Wide Level	Schlumberger Co., Faculty Liaison (Engineering In- ternship Program)	6/1/1998	5/1/2005
School, Institute-Wide Level	Mechanical Engineering, Independent Activities Period Coordinator	10/1/1989	2/1/1991
School, Institute-Wide Level	Singapore-MIT Alliance - Manufacturing Systems and Technology ()	1/1/1999	1/1/2013
School, Institute-Wide Level	Singapore-MIT Alliance - Singapore University of Science and Technology ()	6/1/2015	8/1/2015
School, Institute-Wide Level	Singapore-MIT Alliance - Singapore University of Science and Technology (Other)	7/1/2016	8/30/2016

Non-MIT Professional Activities

Professional Service

Organization Name and Description	Role	Start Date	End Date
National Science Foundation, Washington, DC Committee Member, Design of a Research Manipulator		April 1987	September 1987
National Science Foundation, Washington, DC Committee Member, Review Panel for the Automation and Systems Integration Program		July 1987	September 1987
National Science Foundation, Washington, DC Committee Member, Review Panel for the Engineering Research Center on Robotics and Microelectronics at the University of California, Santa Barbara		October 1987	October 1987
National Science Foundation, Washington, DC Committee Member, Review Panel for the Engineering Technology Initiation, Instrumentation Sensing, and Measurement in Microelectro-Mechanical Devices		June 1988	June 1988
National Science Foundation, Washington, DC Committee Member, Review Panel for the Evaluation of Research Initiation Awards		March 1989	March 1989
National Science Foundation, Washington, DC Committee Member, Review Panel for the Evaluation of Research Initiation Awards		March 1990	March 1990
National Science Foundation, Washington, DC Committee Member, Review Panel for the Presidential Young Investigator Awards		December 1990	December 1990
National Science Foundation, Washington, DC Committee Member		June 1992	June 1992

National Science Foundation, Washington, DC Committee Member		August 1992	August 1992
National Science Foundation, Washington, DC Committee Member		February 1994	February 1994
National Science Foundation, Washington, DC Committee Member		March 1995	March 1995
National Science Foundation, Washington, DC Committee Member, Review Panel for the CAREER Program		February 1996	February 1996
National Science Foundation, Washington, DC Committee Member		January 1997	January 1997
Schlumberger Co., Engineering Internship Program	Faculty Liason	6/1/1998	5/30/2005
National Science Foundation, Washington, DC Committee Member		November 1998	November 1998
Arab Science & Technology Foundation, Information Technology Group Chairman		1/1/2002	-
National Science Foundation, Washington, DC Beginning Ending Committee Member		October 2004	October 2004
National Science Foundation, Washington, DC Committee Member		October 2005	October 2005
National Science Foundation, Washington, DC Committee Member		May 2006	May 2006
National Science Foundation, Washington, DC Committee Member		October 2006	October 2006
European Union funded Network of Excellence for Innovative Production Machines and Systems Review committee Member		3/1/2007	-
2010 IFAC Symposium on Mechatronic Systems International Program Committee Chairman		October 2007	September 2010
ASME's Dynamic Systems and Control Division (DSCD) Conference Editorial Board. Associate editor		1/1/2008	-
National Science Foundation, Washington, DC Committee Member		May 2008	May 2008
National Science Foundation, Washington, DC Committee Member		December 2009	December 2009
2011 Dynamic Systems and Control (DSC) confer- ence, sponsored by the Dynamic Systems and Control Division (DSCD) of ASME International, Arlington, Virginia Vice-Chair for Workshops		October 2011	October 2011
Center for The Development of Advanced Technologies, Algiers, Algeria	Member of Scientific Council	2012	-
The Engineering and Physical Sciences Research Council (EPSRC) United Kingdom	Expert reviewer	October 2013	October 2013
Laboratoire - Informatique, Biologie Intégrative et Systèmes Complexes Evry Universite, France	President - Scientific Council of the Laboratory	October 2013	October 2013
International Institute of Water (IIW), Jodhpur, India	Executive Committee Member	November 2023	-

Professional Registration

None

Organizational Memberships

Organization Name and Description	Role	Start Date	End Date
ASME Dynamics Systems & Control Division, Robotics Panel Vice Chairman		December 1985	December 1986
ASME Dynamics Systems & Control Division, Robotics Panel Chairman		January 1987	December 1991
Editorial Board of Robotics Review		5/1/1987	-
Journal of Dynamic Systems Measurement and Control		March 1989	November 1992
Journal of Mechatronics, Associate Editor		1/1/1999	-
IEEE Society, Member		-	-
ASME Society, Fellow		-	-
Sigma Xi Society, Elected Member		-	-
ASME Dynamics Systems & Control Division, Associate Editor		-	-

Consulting

Organization Name and Description	Role	Start Date	End Date

AT&T Bell Laboratories, Holmdel, NJ		January 1987	January 1987
Varian, Radiation Division, Palo Alto, CA		February 1988	September 1989
EDO Corporation, Government Systems Division, College Point, NY		March 1988	March 1988
Cambridge Computers & Instruments Inc., Cambridge, MA		October 1988	October 1989
Analytic Power Corporation, Boston, MA		March 1989	November 1989
Soltice Corporation, Portland, ME		December 1990	December 1990
Axiam Corporation, Wakefield, MA		August 1991	June 1992
Analytic Power Corporation, Boston, MA		June 1992	December 1992
Analytic Power Corporation, Boston, MA		March 1993	June 1993
Axiam Corporation, Gloucester, MA		October 1994	August 1995
Morgan Stanley Co., New York, NY		December 1994	December 1994
Nightools Camelot Systems, Haverhill, MA		March 1995	March 1995
Altran Corporation, Boston, MA		October 1995	October 1995
General Electric, Schenectady, NY		December 1995	December 1995
The Gillette Company, Boston, MA		December 1998	December 1998
TEKES, Helsinki, Finland		November 1999	May 2000
The Gillette Company, Boston, MA		December 2000	June 2001
Delta Search Labs, Cambridge, MA, Advised and collaborated to set up Super-Computing Facility and Digital Visualization Environment		9/1/2001	-
The Law Firm of Gregory J. Cannata, New York, NY		11/1/2005	2006
Cmart Devices Corp. Somerville, MA		1/1/2007	-
Mitsubishi Electric Corp. , Cambridge, MA		4/1/2007	-
JENTEK Sensors, Inc., Waltham, MA		7/1/2007	-
Jordan Hospital , Plymouth, MA		September 2007	November 2007
Penn State University-College of Medicine - Cancer Institute, Hershey, PA		2009	2009
Qatar Computing Research Institute, Research and Strategy Advisor		June 2011	August 2012
Hong Kong University of Science and Technology, Water Leak Technologies		2014	October 2019
University of Sharjah, United Arab Emirates	Board of Trustees Member	1/1/2016	-
Saudi Aramco, Dhahran, Saudi Arabia		2/1/2016	-
MathEarth, Acton, MA		June 2019	February 2020
Sharjah Oasis for Technology and Innovation, United Arab Emirates	Board of Trustees Member	2021	-
Sharjah Oasis for Technology and Innovation, United Arab Emirates, Board of Trustees Member		2021	-
MathEarth, Acton, MA		January 2021	April 2022
National Council for Scientific Research and Technology, Algeria	Council Member	March 2022	-
Algerian Scientific Council for Artificial Intelligence		June 2023	-
Ecole Centrale de Lille, France, International Advisory Board Member		July 2024	-
Global Prize Innovation in Desalination, member		November 2024	-

Center for the Development of Advanced Technologies, Algiers, Algeria	Member of Scientific Council	-	-