

Prof. İLYAS EKER

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Biography

İlyas Eker (1965) received the B.Sc. in Electrical and Electronic Engineering (EEE), Middle East Technical University (METU)/Turkey in 1988. From 1988 to 1992 he completed his M.Sc. and he worked as research assistant in EEE, Gaziantep University, Turkey. He joined Industrial Control Centre, University of Strathclyde, Glasgow, UK in 1992, where he received his Ph.D. degree in 1995. At present, he works as Associated Professor in EEE, Çukurova University/Turkey. His current research interests are self-tuning control, adaptive control, robustness, fuzzy control, sliding-mode control, fault detection, linear and nonlinear control, and their practical applications.

Education Information

Doctorate, University of Strathclyde, Elektrik-Elektronik Mühendisliği, United Kingdom 1992 - 1995

Post Graduate, Gaziantep University, Elektrik-Elektronik Mühendisliği, Turkey 1988 - 1991

Under Graduate, Middle East Technical University, Elektrik-Elektronik Mühendisliği, Turkey 1984 - 1988

Research Areas

Information Systems, Communication and Control Engineering, Control and System Engineering, Engineering and Technology

Academic Titles / Tasks

Professor, Cukurova University, Mühendislik Mimarlık Fakültesi, Elektrik-Elektronik Mühendisliği, 2005 - Continues

Professional Experience

Head of Department, Cukurova University, Mühendislik Mimarlık Fakültesi, Elektrik-Elektronik Mühendisliği, 2008 - Continues

Courses

PROCESS INSTRUMENTATION AND CONTROL, Under Graduate, 2014 - 2015

CONTROLLER IMPLEMENTION II, Post Graduate, 2014 - 2015

PROCESS CONTROL, Under Graduate, 2014 - 2015

PROCESS CONTROLLER DESIGN, Under Graduate, 2014 - 2015

CONTROL THEORY, Under Graduate, 2014 - 2015
CONTROLLER IMPLEMENTION I, Post Graduate, 2014 - 2015
Semiconductor Devices, Under Graduate, 2014 - 2015
SOFT COMPUTING CONTROL, Doctorate, 2014 - 2015
ADAPTIVE CONTROL STRATEGIES, Doctorate, 2013 - 2014
INTRODUCTION TO MODERN CONTROL, Post Graduate, 2012 - 2013

Advising Theses

EKER İ., Control of Time-Delayed Systems with Experimental Applications, Doctorate, N.SİNAN(Student), 2018
EKER İ., Adaptive Fuzzy Type-2 in Control of 2-DOF Helicopter, Post Graduate, D.MAUCHE(Student), 2016
EKER İ., High order sliding mode control with applications, Doctorate, M.FURAT(Student), 2014
EKER İ., Observer based fault detection and isolation and experimentally application to electromechanical systems, Doctorate, A.ALKAYA(Student), 2012
EKER İ., Self-tuning PID Control with Experimental Applications, Post Graduate, S.SERHAN(Student), 2009
EKER İ., Performance analysis of unified power flow controller (UPFC) by using different controllers, Post Graduate, L.SARIBULUT(Student), 2008
EKER İ., Adaptive Control of Nonlinear Systems with Applications, Doctorate, T.KARA(Student), 2005
EKER İ., Fuzzy Logic Control and its Applications, Post Graduate, Y.TORUN(Student), 2004
EKER İ., Governor Control in Hydropower Stations, Post Graduate, İ.ŞAMİL(Student), 2001
EKER İ., Mathematical Modelling of Water Supply Systems, Post Graduate, T.KARA(Student), 1999

Jury Memberships

Associate Professor Exam, DOÇENTLİK SINAV JÜRİLİĞİ, ÜNİVERSİTELER ARASI KURUL, February, 2015
Associate Professor Exam, DOÇENTLİK SINAV JÜRİLİĞİ, ÜNİVERSİTELER ARASI KURUL, October, 2014

Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

- I. **Design of an optimal fractional fuzzy gain-scheduled Smith Predictor for a time-delay process with experimental application**
Ozbek N. S. , EKER İ.
ISA TRANSACTIONS, vol.97, pp.14-35, 2020 (Journal Indexed in SCI)
- II. **A Novel Modified Delay-Based Control Algorithm with Experimental Application**
Ozbek N. S. , EKER İ.
INFORMATION TECHNOLOGY AND CONTROL, vol.48, pp.90-103, 2019 (Journal Indexed in SCI)
- III. **Adaptive approximate input-output linearizing control with applications to ball and beam mechanism**
Kara T., EKER İ.
TRANSACTIONS OF THE INSTITUTE OF MEASUREMENT AND CONTROL, vol.40, pp.1201-1211, 2018 (Journal Indexed in SCI)
- IV. **Chattering-eliminated adaptive sliding-mode control: an experimental comparison study**
FURAT M., EKER İ.
TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, vol.24, pp.605-620, 2016 (Journal Indexed in SCI)
- V. **An Interactive Computer-Aided Instructional Strategy and Assessment Methods for System Identification and Adaptive Control Laboratory**
OZBEK N. S. , EKER İ.
IEEE TRANSACTIONS ON EDUCATION, vol.58, pp.297-302, 2015 (Journal Indexed in SCI)

- VI. **Computer-Aided Experimental Modeling of a Real System Using Graphical Analysis of a Step Response Data**
FURAT M., EKER İ.
COMPUTER APPLICATIONS IN ENGINEERING EDUCATION, vol.22, pp.571-582, 2014 (Journal Indexed in SCI)
- VII. **Second-order integral sliding-mode control with experimental application**
Furat M., EKER İ.
ISA TRANSACTIONS, vol.53, pp.1661-1669, 2014 (Journal Indexed in SCI)
- VIII. **Luenberger observer-based sensor fault detection: online application to DC motor**
Alkaya A., EKER İ.
TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, vol.22, pp.363-370, 2014 (Journal Indexed in SCI)
- IX. **Comments on second-order sliding mode fault-tolerant control of heat recovery steam generator boiler in combined cycle power plants**
Eker I.
APPLIED THERMAL ENGINEERING, vol.58, pp.570, 2013 (Journal Indexed in SCI)
- X. **Second-Order Sliding Mode Control with PI Sliding Surface and Experimental Application to an Electromechanical Plant**
Eker I.
ARABIAN JOURNAL FOR SCIENCE AND ENGINEERING, vol.37, pp.1969-1986, 2012 (Journal Indexed in SCI)
- XI. **Variance sensitive adaptive threshold-based PCA method for fault detection with experimental application**
Alkaya A., EKER İ.
ISA TRANSACTIONS, vol.50, pp.287-302, 2011 (Journal Indexed in SCI)
- XII. **Second-order sliding mode control with experimental application**
Eker I.
ISA TRANSACTIONS, vol.49, pp.394-405, 2010 (Journal Indexed in SCI)
- XIII. **Sliding mode control with integral augmented sliding surface: design and experimental application to an electromechanical system**
EKER İ., Akinal S. A.
ELECTRICAL ENGINEERING, vol.90, pp.189-197, 2008 (Journal Indexed in SCI)
- XIV. **Fuzzy logic control to be conventional method**
Eker I., TORUN Y.
ENERGY CONVERSION AND MANAGEMENT, vol.47, pp.377-394, 2006 (Journal Indexed in SCI)
- XV. **Hybrid control for robotic manipulators**
KIRECCI A., Eker I.
PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART I-JOURNAL OF SYSTEMS AND CONTROL ENGINEERING, vol.220, pp.81-89, 2006 (Journal Indexed in SCI)
- XVI. **Sliding mode control with PID sliding surface and experimental application to an electromechanical plant**
Eker I.
ISA TRANSACTIONS, vol.45, pp.109-118, 2006 (Journal Indexed in SCI)
- XVII. **Hydro turbine speed control using robust cascade governor controllers**
Eker I.
EUROPEAN TRANSACTIONS ON ELECTRICAL POWER, vol.14, pp.293-310, 2004 (Journal Indexed in SCI)
- XVIII. **Governors for hydro-turbine speed control in power generation: a SIMO robust design approach**
Eker I.
ENERGY CONVERSION AND MANAGEMENT, vol.45, pp.2207-2221, 2004 (Journal Indexed in SCI)
- XIX. **Open-loop and closed-loop experimental on-line identification of a three-mass electromechanical system**
Eker I.
MECHATRONICS, vol.14, pp.549-565, 2004 (Journal Indexed in SCI)

- XX. **Nonlinear modeling and identification of a DC motor for bidirectional operation with real time experiments**
KARA T., Eker I.
ENERGY CONVERSION AND MANAGEMENT, vol.45, pp.1087-1106, 2004 (Journal Indexed in SCI)
- XXI. **The design of robust multi-loop-cascaded hydro governors**
Eker I.
ENGINEERING WITH COMPUTERS, vol.20, pp.45-53, 2004 (Journal Indexed in SCI)
- XXII. **Experimental on-line identification of an electromechanical system**
Eker I.
ISA Transactions, vol.43, pp.13-22, 2004 (Journal Indexed in SCI)
- XXIII. **Nonlinear closed-loop direct identification of DC motor with load for low speed two-directional operation**
KARA T., Eker I.
ELECTRICAL ENGINEERING, vol.86, pp.87-96, 2004 (Journal Indexed in SCI)
- XXIV. **Experimental nonlinear Identification of a three-mass system rotating in two directions**
KARA T., Eker I.
MEASUREMENT & CONTROL, vol.36, pp.309-315, 2003 (Journal Indexed in SCI)
- XXV. **Robust governor design for hydro turbines using a multivariable-cascade control approach**
Eker I.
ARABIAN JOURNAL FOR SCIENCE AND ENGINEERING, vol.28, pp.195-209, 2003 (Journal Indexed in SCI)
- XXVI. **Operation and simulation of city of Gaziantep water supply system in Turkey**
Eker I., GRIMBLE M., KARA T.
RENEWABLE ENERGY, vol.28, pp.901-916, 2003 (Journal Indexed in SCI)
- XXVII. **Self-tuning control as conventional method**
KIRECCI A., Eker I., DULGER L.
ELECTRICAL ENGINEERING, vol.85, pp.101-107, 2003 (Journal Indexed in SCI)
- XXVIII. **Experimental evaluation of a model reference adaptive control for a hydraulic robot: a case study**
KIRECCI A., TOPALBEKIROGLU M., Eker I.
ROBOTICA, vol.21, pp.71-78, 2003 (Journal Indexed in SCI)
- XXIX. **Experimental and model-assisted investigation of activities in a water supply system**
Eker I., KARA T.
TRANSACTIONS OF THE INSTITUTE OF MEASUREMENT AND CONTROL, vol.25, pp.386-402, 2003 (Journal Indexed in SCI)
- XXX. **New aspects of cascade and multi-loop process control**
Eker I., Johnson M.
CHEMICAL ENGINEERING RESEARCH & DESIGN, vol.74, pp.38-54, 1996 (Journal Indexed in SCI)

Articles Published in Other Journals

- I. **Experimental evaluation of various modified Smith predictor-based fractional order control design strategies in control of a thermal process with time delay**
Ozbek N. S., EKER İ.
INTERNATIONAL JOURNAL OF EMBEDDED SYSTEMS, vol.11, pp.68-77, 2019 (Journal Indexed in ESCI)
- II. **GELİŞTİRİLMİŞ İKİNCİ DERECE KAYAN KİPLİ KONTROL: TEORİ VE DENEYSEL UYGULAMA.**
Furat M., EKER İ.
Engineer & the Machinery Magazine, vol.57, pp.49-53, 2016 (Other Refereed National Journals)
- III. **Geçici durum sürecini dikkate alan hata algılama metodu ve uygulamaları.**
EKER İ., ALKAYA A.
Dicle Üniversitesi Mühendislik Fakültesi, vol.31, pp.41-48, 2012 (National Refereed University Journal)
- IV. **Experimental evaluation of sliding-mode control techniques**

EKER İ., FURAT M.

Çukurova Üniversitesi Mühendislik-Mimarlık Fakültesi Dergisi, vol.27, pp.23-37, 2012 (National Refreed University Journal)

V. Sedimentation process in a water treatment system

EKER İ., TÜMAY M., Göğüş F.

Pakistan Journal of Applied Sciences, vol.2, pp.694-697, 2002 (Refereed Journals of Other Institutions)

VI. Modelling of Power System Protection Signalling

EKER İ., TÜMAY M., Erçelebi E.

Journal of Applied Sciences, vol.4, pp.502-517, 2002 (Refereed Journals of Other Institutions)

VII. Modelling and simulation of water supply systems for feedback contro

EKER İ., KARA T.

Revue Des Energies Renouvelables, vol.1, pp.49-55, 2001 (Refereed Journals of Other Institutions)

Refereed Congress / Symposium Publications in Proceedings

I. Robustness issues of improved power system stabilizers

EKER İ.

4th International Energy Congress (ITEC 2001), İzmir, Turkey, pp.227

II. Robust multivariable-cascade governor controller design for hydraulic power generation units

EKER İ.

4th International Energy Congress (ITEC 2001), İzmir, Turkey, pp.233

III. Design, Analysis and Experimental Application of a Fractional Sliding Mode Control for a Benchmark Process

Ozbek N. S., EKER İ.

3rd International Conference on Applied Automation and Industrial Diagnostics (ICAAID), Elazığ, Turkey, 25 - 27 September 2019

IV. Investigation of time-delayed controller design strategies for an electromechanical system

Özbek N. S., EKER İ.

4th International Conference on Electrical and Electronics Engineering, ICEEE 2017, Ankara, Turkey, 8 - 10 April 2017, pp.181-186

V. A fractional fuzzy PI-PD based modified smith predictor for controlling of FOPDT process

Ozbek N. S., EKER İ.

5th International Conference on Electronic Devices, Systems and Applications, ICEDSA 2016, Ras al-Khaimah, United Arab Emirates, 6 - 08 December 2016

VI. An Experimental Comparative Study of Modified Smith Predictor Based Fractional Order Controller Design Strategies for a Time Delay Process

Ozbek N. S., EKER İ.

4th International Conference on Electrical and Electronic Engineering (ICEEE), Ankara, Turkey, 8 - 10 April 2017, pp.199-203

VII. A Novel Delay-Based Control Algorithm: Experimental Application to an Electromechanical System

Ozbek N. S., EKER İ.

10th International Conference on Electrical and Electronics Engineering (ELECO), Bursa, Turkey, 30 November - 02 December 2017, pp.842-846

VIII. A novel interactive system identification and control toolbox dedicated to real-time identification and model reference adaptive control experiments

Özbek N. S., EKER İ.

9th International Conference on Electrical and Electronics Engineering, ELECO 2015, Bursa, Turkey, 26 - 28 November 2015, pp.859-863

IX. Evaluation of risk factors and outcomes of invasive fungal infections in the first six months after allogeneic hematopoietic stem cell transplantation in pediatric acute leukemia: A Turkish multicenter

study

Hazar V., Karasu G., OZTURK G., Kilic S. C. , Uygun V., KARAKÜKCÜ M., OZBEK N., GURSEL O., ATAY D., Kupesiz A., et al.

41st Annual Meeting of the European-Society-for-Blood-and-Marrow-Transplantation, İstanbul, Turkey, 22 - 25 March 2015, vol.50, pp.5579

- X. **Wavelet - Based principal component analysis for process monitoring with experimental application**
Alkaya A., EKER İ.
8th International Conference on Electrical and Electronics Engineering, ELECO 2013, Bursa, Turkey, 28 - 30 November 2013, pp.634-638
- XI. **A new threshold algorithm based PCA method for fault detection in transient state processes**
EKER İ., ALKAYA A.
7th International Conference on Electrical and Electronics Engineering (ELECO), Bursa, Turkey, 1 - 04 December 2011, pp.144-147
- XII. **Sliding mode control with integral action and experimental application to an electromechanical system**
EKER İ., AKINAL S. A.
2005 ICSC Congress on Computational Intelligence Methods and Applications, İstanbul, Turkey, 15 - 17 December 2005, pp.1-6
- XIII. **Sliding mode control with integral action and experimental application to an electromechanical system**
Eker I., Akinal S. A.
ICSC Congress on Computational Intelligence Methods and Applications, İstanbul, Turkey, 15 - 17 December 2005, pp.38-43
- XIV. **Parameter Identification of a Permanent Magnet DC Motor: An Experimental Approach**
EKER İ., Vural A. M.
ICEM 2004, 16. International Conference on Electrical Machines, Crakow, Poland, 5 - 08 September 2004, pp.1-6
- XV. **Experimental application of fuzzy logic control to an electrical drive system**
EKER İ., KARA T.
Proceedings of International Conference on Intelligent Knowledge Systems, Bursa, Turkey, 16 - 20 August 2004, pp.122-129
- XVI. **Experimental evaluation of polynomial robust H adaptive control for a dc motor**
EKER İ.
Eleco'2003 International Conference on Electrical and Electronics Engineering, Bursa, Turkey, 3 - 07 December 2003, pp.356-360
- XVII. **Experimental identification of a electromechanical system running in open-loop conditions**
EKER İ., Vural A. M. , Süslüoğlu B.
Eleco '2003 International Conference on Electrical and Electronics Engineering, Bursa, Turkey, 3 - 07 December 2003, pp.284-288
- XVIII. **Behaviour of a water supply system: a modelling and simulation study of activities with some experiments**
EKER İ., KARA T.
Eleco'2003 International Conference on Electrical and Electronics Engineering, Bursa, Turkey, 3 - 07 December 2003, pp.274-278
- XIX. **Experimental nonlinear identification of a two mass system**
EKER İ., KARA T.
IEEE Conference on Control Applications: CCA 2003, İstanbul, Turkey, 23 - 25 June 2003, pp.66-71
- XX. **Experimental online identification of a three-mass mechanical system**
EKER İ., Vural A. M.
Proceedings of 2003 IEEE Conference on Control Applications, 2003. CCA 2003., İstanbul, Turkey, 23 - 25 June 2003, pp.60-65
- XXI. **Mutli-loop self-tuning governors**

- EKER İ., Aydın İ. Ş.
36th Universities Power Engineering Conference (UPEC'2001), Power Utilisation, Part-5C,, Swansea, United Kingdom, 12 - 14 September 2001
- XXII. **Multi-cascade robust governor design for hydroturbines**
EKER İ., Aydın İ. Ş.
36th Universities Power Engineering Conference (UPEC'2001), Power Utilisation, Part-5C,, Swansea, United Kingdom, 12 - 14 September 2001, pp.1
- XXIII. **Modelling and simulation of water supply systems for feedback control**
EKER İ., KARA T.
36th Universities Power Engineering Conference (UPEC'2001), Power Utilisation, Part-5C,, Swansea, United Kingdom, 12 - 14 September 2001, pp.1-6
- XXIV. **Governors for hydroturbines: New control schemes and robust designs**
EKER İ., Aydın İ. Ş.
36th Universities Power Engineering Conference (UPEC'2001), Power Utilisation, Part-5C,, Swansea, United Kingdom, 12 - 14 September 2001, pp.26-31
- XXV. **Design of multi-loop multivariable cascade hydrogovernors**
EKER İ., Aydın İ. Ş.
36th Universities Power Engineering Conference (UPEC'2001), Power Utilisation, Part-5C,, Swansea, United Kingdom, 12 - 14 September 2001, pp.16-25
- XXVI. **Control of a water supply system**
EKER İ., KARA T.
36th Universities Power Engineering Conference (UPEC'2001), Power Utilisation, Part-5C,, Swansea, United Kingdom, 12 - 14 September 2001, pp.7-15
- XXVII. **Self-tuning robust multi-loop AVR for synchronous generators in primary regulation for power systems**
EKER İ.
Second International Conference on Adaptive Computing in Engineering Design and Control, Plymouth, United Kingdom, 26 - 28 March 1996, pp.220-227
- XXVIII. **Power system stability control with robust multi-loop Automatic Voltage Regulators**
EKER İ., Johnson M.
7th IFAC/ IFORS/ IMACS Conference on Large Scale Systems: Theory and Applications, London, United Kingdom, 11 - 13 July 1995, pp.1-5
- XXIX. **An advanced cascade control framework for process control applications**
EKER İ., Johnson M., GRIMBLE M.
European Conference of Institution of Chemical Engineering (ICHEME Research Event), Edinburgh, United Kingdom, 5 - 06 January 1995, pp.19-21
- XXX. **Aspects of optimal cascade control design for the process control industries**
EKER İ., Johnson M.
First International Conference on Adaptive Computing in Engineering Design and Control, Plymouth, United Kingdom, 21 September 1994 - 22 September 1994, pp.84-89

Supported Projects

EKER İ., Industrial Thesis Project, Ticari Araçlarda Kullanılabilecek Soğutma ve Isıtma Sistemi (HVAC) Tasarımı, Geliştirilmesi ve Uygulaması, 2013 - Continues

EKER İ., Other Supported Projects, Multi-loop Control (EPSRC), 1992 - 1995

EKER İ., Other Supported Projects, Furnace Temperature Control Problem, British Petrol (BP), 1994 - 1994

Scientific Refereeing

Transactions of the Institute of Measurement and Control , SCI Journal, September 2018
Transactions of the Institute of Measurement and Control , SCI Journal, September 2018
Transactions of the Institute of Measurement and Control , SCI Journal, August 2018
Transactions of the Institute of Measurement and Control , SCI Journal, July 2018
IEEE Transactions on Industrial Electronics, SCI Journal, June 2018
Transactions of the Institute of Measurement and Control , SCI Journal, June 2018
IEEE Access, SCI Journal, June 2018
Transactions of the Institute of Measurement and Control , SCI Journal, April 2018
IEEE Transactions on Industrial Electronics, SCI Journal, April 2018
Arabian Journal of Science and Engineering, SCI Journal, April 2018
Transactions of the Institute of Measurement and Control , SCI Journal, March 2018
Journal of Systems and Control Engineering, SCI Journal, March 2018
European Journal of Control, SCI Journal, February 2018
IEEE Transactions on Industrial Electronics, SCI Journal, February 2018
IEEE Transactions on Industrial Electronics, SCI Journal, January 2018
IEEE Access, SCI Journal, September 2017
IEEE Transactions on Industrial Electronics, SCI Journal, June 2017
IEEE Transactions on Industrial Electronics, SCI Journal, May 2017

Citations

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