

Prof. Tufan Kumbasar

Personal Information

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Biography

Tufan Kumbasar received the B.Sc., M.Sc., and Ph.D. degrees in Control and Automation Engineering from Istanbul Technical University (ITU), Türkiye. He holds the position of Professor in the Control and Automation Engineering Department and serves as the Director of the Artificial Intelligence and Intelligent Systems (AI2S) Laboratory, Faculty of Electrical and Electronics Engineering, ITU, Türkiye. His major research interests are in computational intelligence, notably type-2 fuzzy logic, fuzzy control, neural networks, evolutionary algorithms, and intelligent systems. He is also interested in robotics, machine learning, intelligent control, and their real-world applications. He has served as a Publication Co-Chair, Panel Session Co-Chair, Special Session Co-Chair, PC, IPC, and TPC in various international and national conferences. Dr. Kumbasar is an Associate Editor for the IEEE Transactions on Fuzzy Systems and an Area Editor for the International Journal of Approximate Reasoning.

Dr. Kumbasar received the Best Paper Award from the IEEE International Conference on Fuzzy Systems in 2015 and the 6th International Conference on Control Engineering and Information Technology in 2018. He is the recipient of the ODTÜ Mustafa N. Parlar Research and Education Foundation Research Incentive Award in 2020, the Turkish Academy of Sciences Outstanding Young Scientists Award in 2021, the Istanbul Technical University Young Scientists Achievement Award in 2022, IEEE Turkey Research Incentive Award in 2022, and the Science Academy Young Scientist Award in 2023.

Education Information

Doctorate, Istanbul Technical University, Fen Bilimleri Enstitüsü, Kontrol Ve Otomasyon Mühendisliği (Dr), Turkey 2008 - 2012

Postgraduate, Istanbul Technical University, Fen Bilimleri Enstitüsü, Kontrol Ve Otomasyon Mühendisliği (YI) (Tezli), Turkey 2006 - 2008

Undergraduate, Istanbul Technical University, Elektrik-Elektronik Fakültesi, Kontrol Ve Otomasyon Mühendisliği Bölümü, Turkey 2002 - 2006

Foreign Languages

English

Dissertations

- Doctorate, Type-2 fuzzy model inversion methods and fuzzy model based controller design, İstanbul Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Kontrol Ve Otomasyon Mühendisliği (Dr), 2012
Postgraduate, Ters bulanık model alma yöntemleri, İstanbul Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Kontrol Ve Otomasyon Mühendisliği (YI) (Tezli), 2008

Research Areas

Information Systems, Communication and Control Engineering, Control and System Engineering, Controllers, Optimal Control, Robotics and Mechatronics Systems, Smart Factors, Engineering and Technology

Academic Titles / Tasks

- Associate Professor, İstanbul Technical University, Elektrik-Elektronik, Kontrol Ve Otomasyon Mühendisliği, 2018 - Continues
Assistant Professor, İstanbul Technical University, Elektrik-Elektronik, Kontrol Ve Otomasyon Mühendisliği, 2014 - 2018
Research Assistant, İstanbul Technical University, Elektrik-Elektronik, Kontrol Ve Otomasyon Mühendisliği, 2007 - 2014

Academic and Administrative Experience

- İstanbul Teknik Üniversitesi, 2017 - Continues
İstanbul Teknik Üniversitesi, Elektrik-Elektronik Fakültesi, Kontrol Ve Otomasyon Mühendisliği Bölümü, 2016 - Continues

Courses

- OTOMATİK KONTROL SİSTEMLERİ, Undergraduate, 2016 - 2017
DESİGN OF DİSCRETE TİME CONTROL SYSTEMS, Postgraduate, 2016 - 2017, 2015 - 2016
PROCESS CONTROL, Undergraduate, 2016 - 2017, 2015 - 2016, 2014 - 2015
SÜREÇ KONTROL, Undergraduate, 2015 - 2016
AYRIK KONTROL SİSTEMLERİN TASARIMI, Postgraduate, 2014 - 2015
BULANIK MODELLEME VE KONTROL, Postgraduate, 2014 - 2015
CONTROL SYSTEMS, Undergraduate, 2014 - 2015
SEMİNER, Postgraduate, 2014 - 2015

Advising Theses

- Kumbasar T., Differential flatness-based fuzzy controller design for aggressive maneuvering of quadcopters, Doctorate, Ç.GÜZAY(Student), 2023
Kumbasar T., A CONTROL-THEORETIC APPROACH FOR VISION BASED QUALITY AWARE AUTONOMOUS NAVIGATION AND MAPPING TOWARD DRONE LANDING, Doctorate, O.SÖZER(Student), 2023
Kumbasar T., DESIGN AND DEPLOYMENT OF DEEP LEARNING BASED FUZZY LOGICSYSTEMS, Doctorate, A.BEKE(Student), 2023
Kumbasar T., APPLICATIONS OF DEEP REINFORCEMENT LEARNINGFOR ADVANCED DRIVING ASSISTANCE SYSTEMS, Doctorate, M.UĞUR(Student), 2023
Kumbasar T., Kural A., On control of direct-drive permanent magnet synchronous machines in micromobility applications, Postgraduate, K.METEHAN(Student), 2023

Kumbasar T., Integrating fuzzy logic into deep autoencoders for interpretability and clustering, Postgraduate, K.BÖLAT(Student), 2021

Kumbasar T., Analysis and design of general type-2 fuzzy logic controllers, Doctorate, A.SAKALLI(Student), 2020

Kumbasar T., Unity 3d oyun ortamında akıllı ajanlar ile kaçma-kovalama oyun tasarımı, Postgraduate, İ.ŞAHİN(Student), 2020

Kumbasar T., An intelligent overtaking assistant for autonomous racing cars, Postgraduate, E.ARMAĞAN(Student), 2020

Kumbasar T., Transforming feedback control systems on whiteboard into Matlab via a deep learning based intelligent system, Postgraduate, D.ERDEM(Student), 2020

Kumbasar T., Human operator modelling with ts fuzzy modelling using symbolic interval-valued data, Postgraduate, A.ERDİNÇ(Student), 2019

Kumbasar T., Self-commissioning and position sensorless field oriented control of IPMSM, Postgraduate, Y.ÇETİN(Student), 2019

Kumbasar T., Fuzzy logic based position control system design for nano quadcopter, Postgraduate, F.CANDAN(Student), 2018

Kumbasar T., Type-2 fuzzy logic based linguistic pursuing strategy design with a real world application, Postgraduate, A.BEKE(Student), 2018

Kumbasar T., Vision based positioning ABB IRB 140 robot for gas leakage test automation, Postgraduate, A.İLKER(Student), 2018

Kumbasar T., Real-time target tracking and following with ur5 collaborative robot arm, Postgraduate, B.TEKE(Student), 2018

Kumbasar T., Machine learning techniques for surface electromyography based hand gesture recognition, Postgraduate, E.KAYA(Student), 2018

Kumbasar T., Ofis aydınlatma sistemlerinde akıllı telefon ile ölçüm ve BP-BÇ tabanlı optimal kontrol yöntemi, Postgraduate, M.ALPER(Student), 2017

Kumbasar T., An internal model control based tuning method for single input fuzzy PID controller, Postgraduate, A.VAR(Student), 2017

Kumbasar T., FV sistemlerde güneş takip eden sistem tasarımı ve MPPT kontrolü ile enerjinin yüke maksimum olarak aktarılması, Postgraduate, M.İKBAL(Student), 2016

Kumbasar T., Termal konfor ve enerji verimliliği odaklı akıllı klima kontrol sistemi, Postgraduate, O.SÖZER(Student), 2016

Kumbasar T., Time series forecasting via computational intelligence methods, Postgraduate, A.ŞAHİN(Student), 2016

Kumbasar T., A Matlab/Simulink toolbox for interval type-2 fuzzy logic systems, Postgraduate, A.TAŞKIN(Student), 2015

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Zero-order fuzzy neural network with adaptive fuzzy partition and its applications on high-dimensional problems**
Zhang B., Wang J., Zhang C., Yang J., Kumbasar T., Wu W.
Neurocomputing, vol.569, 2024 (SCI-Expanded)
- II. **Towards capsule endoscope locomotion in large volumes: design, fuzzy modeling, and testing**
Peker F., Beşer M. A., İslldar E., Terzioğlu Y., Erten A. C., Kumbasar T., Ferhanoğlu O.
Robotica, vol.42, no.1, pp.203-224, 2024 (SCI-Expanded)
- III. **A Real-World Reinforcement Learning Framework for Safe and Human-Like Tactical Decision-Making**
Yavas M. U., Kumbasar T., Üre N. K.
IEEE Transactions on Intelligent Transportation Systems, vol.24, no.11, pp.11773-11784, 2023 (SCI-Expanded)
- IV. **Designing practical fuzzy gain scheduling controllers for micromobility applications of permanent magnet synchronous machines**
Gul K. M., Kacar B., Aziziaghdam M., Kumbasar T.
Proceedings of the Institution of Mechanical Engineers. Part I: Journal of Systems and Control Engineering, vol.237, no.10, pp.1884-1897, 2023 (SCI-Expanded)

- V. **Quality-Aware Autonomous Navigation with Dynamic Path Cost for Vision-Based Mapping toward Drone Landing**
 Sözer O., Kumbasar T.
Drones, vol.7, no.4, 2023 (SCI-Expanded)
- VI. **More than Accuracy: A Composite Learning Framework for Interval Type-2 Fuzzy Logic Systems**
 Beke A., Kumbasar T.
IEEE Transactions on Fuzzy Systems, vol.31, no.3, pp.734-744, 2023 (SCI-Expanded)
- VII. **Toward Learning Human-Like, Safe and Comfortable Car-Following Policies With a Novel Deep Reinforcement Learning Approach**
 Yavas M. U., Kumbasar T., Üre N. K.
IEEE Access, vol.11, pp.16843-16854, 2023 (SCI-Expanded)
- VIII. **Aggressive maneuvering of a quadcopter via differential flatness-based fuzzy controllers: From tuning to experiments**
 Güzay Ç., Kumbasar T.
Applied Soft Computing, vol.126, 2022 (SCI-Expanded)
- IX. **Deep learning frameworks to learn prediction and simulation focused control system models**
 Tuna T., Beke A., Kumbasar T.
APPLIED INTELLIGENCE, vol.52, no.1, pp.662-679, 2022 (SCI-Expanded)
- X. **A framework for designing cognitive trajectory controllers using genetically evolved interval type-2 fuzzy cognitive maps**
 Amirkhani A., Shirzadeh M., Kumbasar T., Mashadi B.
INTERNATIONAL JOURNAL OF INTELLIGENT SYSTEMS, vol.37, no.1, pp.305-335, 2022 (SCI-Expanded)
- XI. **Towards Systematic Design of General Type-2 Fuzzy Logic Controllers: Analysis, Interpretation, and Tuning**
 Sakalli A., Kumbasar T., Mendel J. M.
IEEE TRANSACTIONS ON FUZZY SYSTEMS, vol.29, no.2, pp.226-239, 2021 (SCI-Expanded)
- XII. **Interval Type-2 Fuzzy Cognitive Map-Based Flight Control System for Quadcopters**
 Amirkhani A., Shirzadeh M., Kumbasar T.
INTERNATIONAL JOURNAL OF FUZZY SYSTEMS, vol.22, no.8, pp.2504-2520, 2020 (SCI-Expanded)
- XIII. **A new fractional-order general type-2 fuzzy predictive control system and its application for glucose level regulation**
 Mohammadzadeh A., Kumbasar T.
APPLIED SOFT COMPUTING, vol.91, 2020 (SCI-Expanded)
- XIV. **Adaptive backstepping controller design for MIMO cancer immunotherapy using Laguerre polynomials**
 Zirkohi M. M., Kumbasar T.
JOURNAL OF THE FRANKLIN INSTITUTE-ENGINEERING AND APPLIED MATHEMATICS, vol.357, no.8, pp.4664-4679, 2020 (SCI-Expanded)
- XV. **Design and development of FOLLY: A self-foldable and self-deployable quadcopter**
 Tuna T., Ovur S. E., Gokbel E., Kumbasar T.
AEROSPACE SCIENCE AND TECHNOLOGY, vol.100, 2020 (SCI-Expanded)
- XVI. **Optimal PID control of spatial inverted pendulum with big bang-big crunch optimization**
 Wang J., Kumbasar T.
IEEE-CAA JOURNAL OF AUTOMATICA SINICA, vol.7, no.3, pp.822-832, 2020 (SCI-Expanded)
- XVII. **A Deep Learning-Based Pipeline for Teaching Control Theory: Transforming Feedback Control Systems on Whiteboard Into MATLAB**
 Erdem D., Beke A., Kumbasar T.
IEEE ACCESS, vol.8, pp.84631-84641, 2020 (SCI-Expanded)
- XVIII. **Type-2 Fuzzy Logic-Based Linguistic Pursuing Strategy Design and Its Deployment to a Real-World Pursuit Evasion Game**
 Beke A., Kumbasar T.

- IEEE TRANSACTIONS ON CYBERNETICS, vol.50, no.1, pp.211-221, 2020 (SCI-Expanded)
- XIX. **A fuzzy logic-based autonomous car control system for the JavaScript Racer game**
Etlik U. B., Korkmaz B., Beke A., Kumbasar T.
TRANSACTIONS OF THE INSTITUTE OF MEASUREMENT AND CONTROL, 2019 (SCI-Expanded)
- XX. **Learning with Type-2 Fuzzy activation functions to improve the performance of Deep Neural Networks**
Beke A., Kumbasar T.
ENGINEERING APPLICATIONS OF ARTIFICIAL INTELLIGENCE, vol.85, pp.372-384, 2019 (SCI-Expanded)
- XXI. **Current development on using Rotary Inverted Pendulum as a benchmark for testing linear and nonlinear control algorithms**
Hamza M. F., Yap H. J., Choudhury I. A., Isa A. I., Zimit A. Y., Kumbasar T.
MECHANICAL SYSTEMS AND SIGNAL PROCESSING, vol.116, pp.347-369, 2019 (SCI-Expanded)
- XXII. **Big Bang-Big Crunch optimized hierarchical sliding-mode control of X-Z inverted pendulum**
Wang J., Kumbasar T.
SIMULATION MODELLING PRACTICE AND THEORY, vol.86, pp.25-35, 2018 (SCI-Expanded)
- XXIII. **A survey on advancement of hybrid type 2 fuzzy sliding mode control**
HAMZA M. F., YAP H. J., CHOUDHURY I. A., CHİROMA H., Kumbasar T.
NEURAL COMPUTING & APPLICATIONS, vol.30, no.2, pp.331-353, 2018 (SCI-Expanded)
- XXIV. **Type-2 Fuzzy Logic Controllers Made Even Simpler: From Design to Deployment for UAVs**
Sarabakha A., Fu C., Kayacan E., Kumbasar T.
IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, vol.65, no.6, pp.5069-5077, 2018 (SCI-Expanded)
- XXV. **An inverse controller design method for interval type-2 fuzzy models**
Kumbasar T., EKSİN İ., GÜZELKAYA M., Yesil E.
SOFT COMPUTING, vol.21, no.10, pp.2665-2686, 2017 (SCI-Expanded)
- XXVI. **HYBRID ADAPTIVE TYPE-2 FUZZY TRACKING CONTROL OF CHAOTIC OSCILLATION DAMPING OF POWER SYSTEMS**
Zirkohi M. M., Kumbasar T., Lin T.
ASIAN JOURNAL OF CONTROL, vol.19, no.3, pp.1114-1125, 2017 (SCI-Expanded)
- XXVII. **Revisiting Karnik-Mendel Algorithms in the framework of Linear Fractional Programming**
Kumbasar T.
INTERNATIONAL JOURNAL OF APPROXIMATE REASONING, vol.82, pp.1-21, 2017 (SCI-Expanded)
- XXVIII. **Book review**
KUMBASAR T.
FUZZY SETS AND SYSTEMS, vol.306, pp.169-170, 2017 (SCI-Expanded)
- XXIX. **Robust Stability Analysis and Systematic Design of Single-Input Interval Type-2 Fuzzy Logic Controllers**
Kumbasar T.
IEEE TRANSACTIONS ON FUZZY SYSTEMS, vol.24, no.3, pp.675-694, 2016 (SCI-Expanded)
- XXX. **A Self-Tuning zSlices-Based General Type-2 Fuzzy PI Controller**
Kumbasar T., Hagras H.
IEEE TRANSACTIONS ON FUZZY SYSTEMS, vol.23, no.4, pp.991-1013, 2015 (SCI-Expanded)
- XXXI. **General derivation and analysis for input-output relations in interval type-2 fuzzy logic systems**
Aliasghary M., EKSİN İ., Güzelkaya M., KUMBASAR T.
SOFT COMPUTING, vol.19, no.5, pp.1283-1293, 2015 (SCI-Expanded)
- XXXII. **Big Bang-Big Crunch optimization based interval type-2 fuzzy PID cascade controller design strategy**
Kumbasar T., Hagras H.
INFORMATION SCIENCES, vol.282, pp.277-295, 2014 (SCI-Expanded)
- XXXIII. **A simple design method for interval type-2 fuzzy pid controllers**
Kumbasar T.
SOFT COMPUTING, vol.18, no.7, pp.1293-1304, 2014 (SCI-Expanded)
- XXXIV. **Exact inversion of decomposable interval type-2 fuzzy logic systems**

- Kumbasar T., EKSİN İ., Güzelkaya M., YESIL E.
INTERNATIONAL JOURNAL OF APPROXIMATE REASONING, vol.54, no.2, pp.253-272, 2013 (SCI-Expanded)
- XXXV. **Online tuning of fuzzy PID controllers via rule weighing based on normalized acceleration**
Karasakal O., Güzelkaya M., EKSİN İ., YESIL E., KUMBASAR T.
ENGINEERING APPLICATIONS OF ARTIFICIAL INTELLIGENCE, vol.26, no.1, pp.184-197, 2013 (SCI-Expanded)
- XXXVI. **Type-2 fuzzy model based controller design for neutralization processes**
Kumbasar T., EKSİN İ., Güzelkaya M., YESIL E.
ISA TRANSACTIONS, vol.51, no.2, pp.277-287, 2012 (SCI-Expanded)
- XXXVII. **Adaptive fuzzy model based inverse controller design using BB-BC optimization algorithm**
Kumbasar T., EKSİN İ., Güzelkaya M., YESIL E.
EXPERT SYSTEMS WITH APPLICATIONS, vol.38, no.10, pp.12356-12364, 2011 (SCI-Expanded)
- XXXVIII. **Interval type-2 fuzzy inverse controller design in nonlinear IMC structure**
Kumbasar T., EKSİN İ., Güzelkaya M., YESIL E.
ENGINEERING APPLICATIONS OF ARTIFICIAL INTELLIGENCE, vol.24, no.6, pp.996-1005, 2011 (SCI-Expanded)
- XXXIX. **Big Bang Big Crunch Optimization Method Based Fuzzy Model Inversion**
KUMBASAR T., GÜZELKAYA M.
Lecture Notes in Computer Science, pp.732-740, 2008 (SCI-Expanded)

Articles Published in Other Journals

- I. **Real-Time Interval Type-2 Fuzzy Control of an Unmanned Aerial Vehicle with Flexible Cable-Connected Payload**
Candan F., Dik Ö. F., Kumbasar T., Mahfouf M., Mihaylova L.
Algorithms, vol.16, no.6, 2023 (ESCI)
- II. **Parameter Optimization of Interval Type-2 Fuzzy Neural Networks Based on PSO and BBBC Methods**
Wang J., Kumbasar T.
IEEE-CAA JOURNAL OF AUTOMATICA SINICA, vol.6, pp.247-257, 2019 (Peer-Reviewed Journal)
- III. **A fuzzy logic based intelligent autonomous vehicle control system design in the TORCS game environment**
Armagan E., KUMBASAR T.
PAMUKKALE UNIVERSITY JOURNAL OF ENGINEERING SCIENCES-PAMUKKALE UNIVERSITESI MUHENDISLIK BILIMLERİ DERGİSİ, vol.24, no.8, pp.1435-1442, 2018 (Peer-Reviewed Journal)
- IV. **Type-2 Fuzzy Logic Control in Computer Games**
Sahin A., Kumbasar T.
TYPE-2 FUZZY LOGIC AND SYSTEMS: DEDICATED TO PROFESSOR JERRY MENDEL FOR HIS PIONEERING CONTRIBUTION, vol.362, pp.105-127, 2018 (Scopus)
- V. **Interval type-2 fuzzy PID controllers and an online self-tuning mechanism**
KUMBASAR T.
PAMUKKALE UNIVERSITY JOURNAL OF ENGINEERING SCIENCES-PAMUKKALE UNIVERSITESI MUHENDISLIK BILIMLERİ DERGİSİ, vol.22, pp.643-649, 2016 (Peer-Reviewed Journal)
- VI. **Interval Type-2 Fuzzy PID Controllers**
Kumbasar T., Hagras H.
SPRINGER HANDBOOK OF COMPUTATIONAL INTELLIGENCE, pp.285-294, 2015 (Peer-Reviewed Journal)
- VII. **A Design Methodology and Analysis for Interval Type 2 Fuzzy PI PD Controllers**
MORTAZA A., EKSİN İ., GÜZELKAYA M., KUMBASAR T.
International Journal Of Innovative Computing Information And Control, vol.10, pp.4215-4230, 2013 (Scopus)
- VIII. **A design methodology and analysis for interval type 2 fuzzy PI PD controllers**
ALIASGHARY M., EKSİN İ., GÜZELKAYA M., KUMBASAR T.
Int. J. Innov. Comput. Inf. Control, vol.9, no.10, pp.4215-4230, 2013 (Peer-Reviewed Journal)
- IX. **Type-2 fuzzy model inverse controller design based on BB-BC optimization method**

Books & Book Chapters

- I. **Type-2 Fuzzy Logic Control in Computer Games**
Sahin A., KUMBASAR T.
in: Type-2 Fuzzy Logic and Systems, John R., Hagras H., Castillo O., Editor, Springer, 2018
- II. **An Overview on Interval Type-2 Fuzzy PID Controllers**
KUMBASAR T., Hagras H.
in: Handbook of Computational Intelligence, Kacprzyk, Janusz, Pedrycz, Witold , Editor, Springer, 2015

Refereed Congress / Symposium Publications in Proceedings

- I. **Design of 2 DOF Fuzzy Control System for Fuel Cell Systems**
Kendir F., Kumbasar T.
Intelligent and Fuzzy Systems - Intelligence and Sustainable Future Proceedings of the INFUS 2023 Conference, İstanbul, Turkey, 22 - 24 August 2023, vol.759 LNNS, pp.584-591
- II. **Design of a Fuzzy Linear Quadratic Regulator for the Speed Control of SPMSM**
Gul K. M., Kural A., Kumbasar T.
Intelligent and Fuzzy Systems - Intelligence and Sustainable Future Proceedings of the INFUS 2023 Conference, İstanbul, Turkey, 22 - 24 August 2023, vol.759 LNNS, pp.692-699
- III. **Design and Implementation of a Novel Self-Tuning Single Input Fuzzy Controller for PMSM**
Gul K. M., Kacar B., Aziziaghdam M., Kumbasar T.
2023 IEEE International Conference on Fuzzy Systems, FUZZ 2023, Incheon, South Korea, 13 - 17 August 2023
- IV. **Recognizing and Tracking Person of Interest: A Real-Time Efficient Deep Learning based Method for Quadcopters**
Dursun H. E., Guven E. C., Avci B., Kumbasar T.
10th International Conference on Recent Advances in Air and Space Technologies, RAST 2023, İstanbul, Turkey, 7 - 09 June 2023
- V. **Generating High-Quality Prediction Intervals for Regression Tasks via Fuzzy C-Means Clustering-Based Conformal Prediction**
Msaddi S., Kumbasar T.
Intelligent and Fuzzy Systems - Intelligence and Sustainable Future Proceedings of the INFUS 2023 Conference, İstanbul, Turkey, 22 - 24 August 2023, vol.759 LNNS, pp.532-539
- VI. **Towards Reliable Uncertainty Quantification and High Precision with General Type-2 Fuzzy Systems**
Avci B., Beke A., Kumbasar T.
2023 IEEE International Conference on Fuzzy Systems, FUZZ 2023, Incheon, South Korea, 13 - 17 August 2023
- VII. **Model-Based Reinforcement Learning for Advanced Adaptive Cruise Control: A Hybrid Car Following Policy**
Yavas U., Kumbasar T., Üre N. K.
33rd IEEE Intelligent Vehicles Symposium (IEEE IV), Aachen, Germany, 5 - 09 June 2022, pp.1466-1472
- VIII. **Enhancing the Learning of Interval Type-2 Fuzzy Classifiers with Knowledge Distillation**
Erdem D., Kumbasar T.
IEEE International Conference on Fuzzy Systems, Luxembourg, Luxembourg, 11 - 14 July 2021, pp.1-7
- IX. **Integrating Interval Type-2 Fuzzy Sets into Deep Embedding Clustering to Cope with Uncertainty**
Bölat K., Kumbasar T.
IEEE International Conference on Fuzzy Systems, Luxembourg, Luxembourg, 11 - 14 July 2021, pp.1-7
- X. **Capturing Uncertainty with Interval Fuzzy Logic Systems through Composite Deep Learning**

- Beke A., Kumbasar T.
IEEE International Conference on Fuzzy Systems, Luxembourg, Luxembourg, 11 - 14 July 2021, pp.1-7
- XI. **An Intelligent Overtaking Assistant System for Autonomous Vehicles**
Armağan E., Kumbasar T.
International Conference on Intelligent and Fuzzy Systems, INFUS 2020, İstanbul, Turkey, 21 - 23 July 2020, vol.1197 AISC, pp.1068-1076
- XII. **Catch me if you can: A pursuit-evasion game with intelligent agents in the Unity 3D game environment**
Sahin I., Kumbasar T.
6th International Conference on Electrical Engineering, ICEE 2020, Virtual, Istanbul, Turkey, 25 - 27 September 2020
- XIII. **Interpreting Variational Autoencoders with Fuzzy Logic: A step towards interpretable deep learning based fuzzy classifiers**
Bölat K., KUMBASAR T.
2020 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Glasgow, United Kingdom, 19 - 24 July 2020
- XIV. **A Design Approach for General Type-2 Fuzzy Logic Controllers with an Online Scheduling Mechanism**
Sakalli A., Kumbasar T., Mendel J.
2020 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), 19 - 24 July 2020
- XV. **Real-Time Leader-Follower Formation Control of Nano Quadcopters in the Framework of Ratio Control**
Mandacı M., KUMBASAR T.
European Control Conference, 12 - 15 May 2020
- XVI. **Parameter Identification and Auto-Tuning of IPMSM for Self-Commissioning**
Çetin Y., Akyol I. E., Buyukozturk K. C., KUMBASAR T.
2020 7th International Conference on Electrical and Electronics Engineering (ICEEE), Antalya, Turkey, 14 - 16 April 2020
- XVII. **A New Approach for Tactical Decision Making in Lane Changing: Sample Efficient Deep Q Learning with a Safety Feedback Reward**
Yavas U., Kumbasar T., Üre N. K.
31st IEEE Intelligent Vehicles Symposium (IV), ELECTR NETWORK, 23 - 26 June 2020, pp.1156-1161
- XVIII. **Altitude and Position Control of Parrot Mambo Minidrone with PID and Fuzzy PID Controllers**
Kaplan M. R., Eraslan A., BEKE A., KUMBASAR T.
International Conference on Electrical and Electronics Engineering, 28 - 30 November 2019
- XIX. **Human Operator Modelling with Interval-valued Takagi-Sugeno Fuzzy Models**
tüfekçi a. e., KUMBASAR T.
International Conference on Electrical and Electronics Engineering, 28 - 30 November 2019
- XX. **Self-Commissioning of Electrical Parameters for Sensorless IPMSM Drives**
çetin y., akyol i. e., büyüköztürk k. c., KUMBASAR T.
International Conference on Electrical and Electronics Engineering, 28 - 30 November 2019
- XXI. **Big Bang Big Crunch based Near-Optimal Guidance Law for Interceptor Problem**
Banerjee A., Nabi M. u., KUMBASAR T.
International Conference on Electrical and Electronics Engineering, 28 - 30 November 2019
- XXII. **A New Insight on the Mappings of Type-2 Fuzzy Logic Systems**
KUMBASAR T.
2019 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), New Orleans, LA, USA, 23 - 26 June 2019
- XXIII. **Interval Type-2 Fuzzy Systems as Deep Neural Network Activation Functions**
BEKE A., KUMBASAR T.
Proceedings of the 2019 Conference of the International Fuzzy Systems Association and the European Society for Fuzzy Logic and Technology (EUSFLAT 2019), Prague, Czech Republic, 9 - 13 September 2019
- XXIV. **Real-Time Applications of Fuzzy Logic Control**

- KUMBASAR T.
International Symposium on Advanced Electrical and Communication Technologies, 21 - 23 November 2018
- XXV. **A Fuzzy Logic based Real Time Two-Wheeled Inverted Pendulum Robot**
Ovur S. E., Candan F., BEKE A., KUMBASAR T.
6th International Conference on Control Engineering Information Technology, 25 - 27 October 2018
- XXVI. **Hand Gesture Recognition Systems with the Wearable Myo Armband**
Kaya E., KUMBASAR T.
6th International Conference on Control Engineering Information Technology, 25 - 27 October 2018
- XXVII. **Analyzing the control surfaces of type-1 and interval type-2 FLCs through an experimental study**
SAKALLI A., Beke A., Kumbasar T.
2018 IEEE International Conference on Fuzzy Systems, FUZZ 2018, Rio-De-Janeiro, Brazil, 8 - 13 July 2018
- XXVIII. **Single vs. Double input interval type-2 fuzzy PID controllers: Which one is better?**
Beke A., Kumbasar T.
2018 IEEE International Conference on Fuzzy Systems, FUZZ 2018, Rio-De-Janeiro, Brazil, 8 - 13 July 2018
- XXIX. **Design and Deployment of Fuzzy PID Controllers to the nano quadcopter Crazyflie 2.0**
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Supported Projects

- Sezer V., Demir A., Kumbasar T., Zengin R. S., Project Supported by Higher Education Institutions, Servis Robotları İçin Otonom Sürüş Çözümlerinin Geliştirilmesi ve Uygulanması, 2018 - 2019
- Kumbasar T., Candan F., Project Supported by Higher Education Institutions, Intelligent Systems in Embedded Systems, 2018 - 2019
- Kumbasar T., Türkeli S., Beke A., Project Supported by Higher Education Institutions, Kaçma Kovalama Oyunları için Akıllı

Kontrol Sistemlerinin Geliştirilmesi, 2017 - 2018

Kumbasar T., Project Supported by Higher Education Institutions, ARALIK DEĞERLİ TİP-2 BULANIK SİSTEMLER İÇİN AÇIK KAYNAK BİR MATLAB/SİMULINK ARAYÜZÜ, 2015 - 2018

Kumbasar T., Project Supported by Higher Education Institutions, Aralık Değerli tip-2 ve Çevrim İçi Kural

Ağırlıklandırmalı Tip-1 Bulanık PID Kontrolörlerin Ph Süreci Üzerinde Performans Analizi, 2014 - 2018

Kumbasar T., Project Supported by Higher Education Institutions, Büyük Çöküş Büyük Patlama Tabanlı Aralık Değerli Tip -2 Bulanık Kontrolörler için bir tasarım yöntemi, 2013 - 2018

Kumbasar T., Project Supported by Higher Education Institutions, Zaman serisi tahminlemede bulanık mantık tabanlı yeni bir yaklaşım, 2015 - 2016

Activities in Scientific Journals

IEEE Transactions on Fuzzy Systems, Assistant Editor/Section Editor, 2018 - Continues

Metrics

Publication: 144

Citation (WoS): 1016

Citation (Scopus): 1748

H-Index (WoS): 17

H-Index (Scopus): 21

Awards

Kumbasar T., Young Scientists Award , Bilim Akademisi, March 2023

Kumbasar T., IEEE Turkey Research Incentive Award, Ieee Türkiye, December 2022

Kumbasar T., Outstanding Young Scientists Achievement Award, İstanbul Teknik Üniversitesi, December 2022

Kumbasar T., Outstanding Young Scientists Award , Tüba, December 2021

Kumbasar T., Research Incentive Award, Odtü Mustafa N. Parlar Eğitim Ve Araştırma Vakfı, December 2021

Kumbasar T., Best Paper Award, 6th International Conference on Control Engineering & Information Technology, October 2018

Kumbasar T., Best Paper Award, IEEE International Conference on Fuzzy Systems, July 2015

Non Academic Experience

University of Alaska Fairbanks, ABD

Essex Üniversitesi, İngiltere