

## Prof. Cenk ULU

### Personal Information

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### International Researcher IDs

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### Biography

He got his electrical engineering B.Sc. degree from the Yildiz Technical University in 2004. Next, he was awarded M.Sc. and Ph.D degrees in control and automation engineering by The Istanbul Technical University in 2007 and 2013, respectively. He worked as a chief senior researcher at the Energy Institute of TUBITAK Marmara Research Center between 2007 and 2018. He currently works as an associate professor at the Mechatronics Engineering Department of the Yildiz Technical University since October 2018.

### Education Information

Doctorate, Istanbul Technical University, Fen Bilimleri Enstitüsü, Kontrol Ve Otomasyon Mühendisliği, Turkey 2007 - 2013

Postgraduate, Istanbul Technical University, Fen Bilimleri Enstitüsü, Kontrol Ve Otomasyon Mühendisliği, Turkey 2004 - 2006

Undergraduate, Yildiz Technical University, Faculty Of Electrical & Electronics, Elektrik Mühendisliği, Turkey 1999 - 2004

### Foreign Languages

English, C1 Advanced

### Dissertations

Doctorate, Granüler tip-2 bulanık yapılar kullanılarak sistemlerin modellenmesi ve kontrolü, İstanbul Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Kontrol Ve Otomasyon Mühendisliği, 2013

Postgraduate, Bulanık kontrolörlerde dilsel biçimlendiricilerin optimal ayarlanmasına dayalı tasarım yöntemi, İstanbul Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Kontrol Ve Otomasyon Mühendisliği, 2006

### Research Areas

Control and System Engineering, Controllers, Industrial automation, Robotics and Mechatronics Systems, Field and Service Robots, Mechatronic Systems, Simulation and Modelling, Artificial Intelligence, Computer Learning and Pattern Recognition, Fuzzy Sets and Systems, Robotics

## Academic Titles / Tasks

Professor, Yildiz Technical University, Faculty Of Mechanical Engineering, Department Of Mechatronics Engineering, 2023 - Continues

Associate Professor, Yildiz Technical University, Faculty Of Mechanical Engineering, Department Of Mechatronics Engineering, 2018 - Continues

## Courses

Electrical Drive Systems, Undergraduate, 2019 - 2020, 2018 - 2019

Special Topics in Mechatronics Engineering, Doctorate, 2019 - 2020

Industrial Automation, Undergraduate, 2018 - 2019

Electromechanical Energy Conversion Systems, Undergraduate, 2018 - 2019

## Advising Theses

Ulu C., Sonar verilerinde fiziksel ortam kaynaklı ölçüm hatalarının giderilmesi için yeni bir yöntem, Postgraduate, M.ONUR(Student), 2023

Ulu C., Obut S., Ters bulanık kontrol yöntemlerinin başarımlarını karşılaştırması, Postgraduate, T.BURAK(Student), 2023

Ulu C., DO-178c/DO-331 uyumlu model tabanlı tasarım yaklaşımı kullanılarak bulanık mantık tabanlı uçuş kontrol sistemi geliştirilmesi, Postgraduate, Y.ERTUĞRUL(Student), 2023

Ulu C., Transfer öğrenmesi tabanlı hibrit evrişimsel sinir ağı modelleri kullanılarak meme kanseri teşhisi, Postgraduate, C.SEYİDBAYLI(Student), 2022

Ulu C., Otonom kara araçları için yeni hibrit ve iyileştirilmiş yol takip kontrol yöntemleri, Postgraduate, M.ÇELİK(Student), 2021

ULU C., Uzaktan Kontrollü Sualtı Aracı İçin Kumanda Konsolu Geliştirilmesi ve Açık Çevrim Motor Kontrol Uygulaması, Postgraduate, S.YAYLA(Student), 2017

ULU C., Bulanık Zaman Serisi Modellerinde Farklı Üyelik Fonksiyonlarının Başarımlarına Etkisi, Postgraduate, A.İhsan(Student), 2014

## Jury Memberships

Competition, SSM ROBOIK İnsansız Su Altı Araçları Prototip Yarışması, Savunma Sanayii Müsteşarlığı, October, 2018

## Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Internal Model Control Design for Nonlinear Systems Based on Inverse Dynamic Takagi–Sugeno Fuzzy Model**  
Karama K. K., ULU C.  
Processes, vol.12, no.7, 2024 (SCI-Expanded)
- II. **Altitude control of a quadcopter using interval type-2 fuzzy controller with dynamic footprint of uncertainty**  
Şahin İ., Ulu C.  
ISA Transactions, vol.134, pp.86-94, 2023 (SCI-Expanded)
- III. **Modeling, Control, and Experimental Verification of a 500 kW DFIG Wind Turbine**  
Aykut O., Ulu C., Kömürgöz Kırış G.  
ADVANCES IN ELECTRICAL AND COMPUTER ENGINEERING, vol.22, no.1, pp.13-20, 2022 (SCI-Expanded)
- IV. **An exact inversion method for multi-input-single-output decomposable TS fuzzy systems**

- ULU C.  
 JOURNAL OF INTELLIGENT & FUZZY SYSTEMS, vol.43, no.5, pp.6343-6356, 2022 (SCI-Expanded)
- V. **Electrical design and testing of a 500 kW doubly fed induction generator for wind power applications**  
 Ulu C., Komurgoz G.  
 TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, vol.25, no.2, pp.1278-1290, 2017 (SCI-Expanded)
- VI. **Exact analytical inversion of interval type-2 TSK fuzzy logic systems with closed form inference methods**  
 Ulu C.  
 APPLIED SOFT COMPUTING, vol.37, pp.60-70, 2015 (SCI-Expanded)
- VII. **Exact analytical inverse mapping of decomposable TS fuzzy systems with singleton and linear consequents**  
 Ulu C.  
 APPLIED SOFT COMPUTING, vol.23, pp.202-214, 2014 (SCI-Expanded)
- VIII. **Exact analytical inversion of TSK fuzzy systems with singleton and linear consequents**  
 Ulu C., Güzelkaya M., Eksin İ.  
 INTERNATIONAL JOURNAL OF APPROXIMATE REASONING, vol.55, no.6, pp.1357-1368, 2014 (SCI-Expanded)
- IX. **A closed form type reduction method for piecewise linear interval type-2 fuzzy sets**  
 Ulu C., Güzelkaya M., Eksin İ.  
 INTERNATIONAL JOURNAL OF APPROXIMATE REASONING, vol.54, no.9, pp.1421-1433, 2013 (SCI-Expanded)
- X. **Granular type-2 membership functions: A new approach to formation of footprint of uncertainty in type-2 fuzzy sets**  
 Ulu C., Güzelkaya M., Eksin İ.  
 APPLIED SOFT COMPUTING, vol.13, no.8, pp.3713-3728, 2013 (SCI-Expanded)

## Articles Published in Other Journals

- I. **INVERSE NEURO-FUZZY MODEL BASED CONTROLLER DESIGN FOR A PH NEUTRALIZATION PROCESS**  
 Akca T. B., Ulu C., Obut S.  
 Journal of scientific reports-A (Online), no.52, pp.19-34, 2023 (Peer-Reviewed Journal)
- II. **ANFIS Based Inverse Controller Design for Liquid Level Control of a Spherical Tank Projekt sterownika ANFIS do sterowania poziomem cieczy w cylindrycznym zbiorniku**  
 AKCA T. B., ULU C., OBUT S.  
 Przegląd Elektrotechniczny, vol.99, no.2, pp.32-36, 2023 (ESCI)
- III. **Linguistic Hedge Based Constrained Representation of Interval Type-2 Fuzzy Sets**  
 Karadeniz S., Ulu C.  
 International Journal of Applied Engineering and Technology, vol.4, no.3, pp.11-19, 2022 (Scopus)
- IV. **DESIGN AND DEVELOPMENT OF A TEST SETUP FOR REACTION WHEEL SYSTEMS OF NANOSATELLITES**  
 Koç M. H., Ünlü U., Kuvat T., ULU C.  
 Journal of Selcuk-Technic, pp.181-195, 2020 (Peer-Reviewed Journal)
- V. **THRUSTER DESIGN FOR UNMANNED UNDERWATER VEHICLES**  
 Gücer Ç. A., Acar O., Kantarcıoğlu B., Ulu C.  
 Journal of Selcuk-Technic, vol.0, pp.196-208, 2020 (Scopus)
- VI. **DEVELOPMENT OF AN AGRICULTURE ROBOT FOR ROW-TYPE SEED SOWING APPLICATIONS**  
 Yurtsever C., Ertaş Y., Sustam O., ULU C.  
 Journal of Selcuk-Technic, pp.228-242, 2020 (Peer-Reviewed Journal)
- VII. **Design and Development of a Mobile Robot for Search and Rescue Operations in Debris**  
 Baldemir Y., İyigün S., Musayev O., ULU C.

INTERNATIONAL JOURNAL OF APPLIED MATHEMATICS ELECTRONICS AND COMPUTERS, vol.8, no.4, pp.133-137, 2020 (Peer-Reviewed Journal)

- VIII. **Makine Bağlantı Elemanlarını Ayıklama Sistemi Geliştirilmesi**  
Tuncer B., Fırl F. S., Gündoğan S., Kalkanlı A., ULU C.  
European Journal of Science and Technology, pp.289-299, 2020 (Peer-Reviewed Journal)
- IX. **Fuzzy Cognitive Map Based PID Controller Design**  
Denizci A., Ulu C.  
Avrupa Bilim ve Teknoloji Dergisi, vol.1, pp.165-171, 2020 (Peer-Reviewed Journal)
- X. **Stabilization of Inverted Pendulum System Using Fuzzy Cognitive Map Based PD Controllers**  
Denizci A., ULU C.  
European Journal of Science and Technology, pp.156-164, 2020 (Peer-Reviewed Journal)
- XI. **Electromagnetic and thermal design/analysis of an induction motor for electric vehicles**  
Ulu C., Korman O., Kömürgöz Kırış G.  
International Journal of Mechanical Engineering and Robotics Research, vol.8, no.2, pp.239-245, 2019 (Scopus)

### Refereed Congress / Symposium Publications in Proceedings

- I. **Single Input Interval Type-3 Fuzzy PID Controller Approach**  
Sahin I., ULU C.  
8th International Artificial Intelligence and Data Processing Symposium, IDAP 2024, Malatya, Turkey, 21 - 22 September 2024
- II. **Control of Inverted Pendulum System with Single Input Interval Type-2 Fuzzy PD Controllers**  
Sahin I., Ulu C.  
2023 Innovations in Intelligent Systems and Applications Conference, ASYU 2023, Sivas, Turkey, 11 - 13 October 2023
- III. **A New Exact Inversion Approach for Takagi-Sugeno Fuzzy Systems Representing SISO Nonlinear Systems**  
Karama Khamis K., Cenk U.  
2023 Innovations in Intelligent Systems and Applications Conference, ASYU 2023, Sivas, Turkey, 11 - 13 October 2023
- IV. **Bitcoin Buy/Sell Decision Making with a Fuzzy Inference System**  
Çapkan Y., Ulu C.  
International Conference on Engineering and Applied Natural Sciences, Konya, Turkey, 15 - 18 October 2022, pp.773-777
- V. **Inverse Neuro-Fuzzy Model Based Controller Design for a pH Neutralization Process**  
Akca T. B., Ulu C., Obut S.  
International Conference on Applied Engineering and Natural Sciences, Konya, Turkey, 15 - 18 October 2022, pp.90
- VI. **Machine Fasteners Classification System**  
Tuncer B., Fırl F. S., Gündoğan S., Kalkanlı A., ULU C.  
9th International Conference on Advanced Technologies (ICAT), İstanbul, Turkey, 10 - 12 August 2020, pp.143-148
- VII. **Fuzzy Cognitive Map Based PI Controller Design**  
Denizci A., Karadeniz S., ULU C.  
INFUS, İstanbul, Turkey, 21 - 23 July 2020, pp.1250-1257
- VIII. **Rüzgar Türbini Uygulamaları İçin Çift Beslemeli Asenkron Generatör Tasarımı, Modellenmesi ve Kontrolü**  
ULU C., OZAN A., AKÇİL L., KÖMÜRGÖZ KIRIŞ G.  
Anadolu Enerji Sempozyumu, Edirne, Turkey, 18 - 20 April 2018, pp.2135-2145
- IX. **Development of the MarmarOV remotely operated underwater vehicle system**  
Ulu C., CANBAK O., Altunkaya M. U., TAŞKIN H., YAYLA S.

2017 International Artificial Intelligence and Data Processing Symposium, IDAP 2017, Malatya, Turkey, 16 - 17 September 2017

- X. **Electromagnetic and thermal analysis/design of an induction motor for electric vehicles**  
Ulu C., Korman O., K m rg z G.  
8th International Conference on Mechanical and Aerospace Engineering, ICMAE 2017, Prague, Czech Republic, 22 - 25 July 2017, pp.6-10
- XI. **Design of 75 kW asynchronous motor for electric vehicle applications Elektrikli ara uygulamalari iin 75 kW asenkron motor tasarimi**  
Ulu C., Komurgoz G.  
2016 National Conference on Electrical, Electronics and Biomedical Engineering, ELECO 2016, Bursa, Turkey, 1 - 03 December 2016, pp.286-290
- XII. **Elektrikli Ara Uygulamaları iin 75 kW Asenkron Motor Tasarımı**  
ULU C., K M RG Z KIRIŐ G.  
Elektrik-Elektronik ve Bilgisayar M hendisliĐi Sempozyumu, Bursa, Turkey, 1 - 03 December 2016, pp.286-290
- XIII. **MarmaROV Uzaktan Kontroll  Sualtı Aracı Sistemi**  
ULU C., CANBAK O., ALTUNKAYA M. U., TAŐKIN H., YAYLA S.  
Otomatik Kontrol T rk Milli Komitesi Ulusal Toplantısı, EskiŐehir, Turkey, 29 September - 01 October 2016, pp.698-704
- XIV. **MarmaROV Uzaktan Kontroll  İnsansız Sualtı Aracı iin Softplc Temelli Kontrol ve Kullanıcı Aray z  Yazılımı Tasarımı**  
TAŐKIN H., ULU C., CANBAK O., ALTUNKAYA M. U., YAYLA S., BALIKI A.  
Otomatik Kontrol T rk Milli Komitesi Ulusal Toplantısı, EskiŐehir, Turkey, 29 September - 01 October 2016, pp.705-710
- XV. **Design of an integer order PID controller for single fractional order pole model**  
Yumuk E., G zelkaya M., Eksin İ., Ulu C.  
IEEE Conference on System, Process and Control, ICSPC 2015, Bandar Sunway, Malaysia, 19 - 20 December 2015, pp.85-90
- XVI. **G zlem Amalı Uzaktan Kontroll  İnsansız Sualtı Aracı Tasarımı**  
ULU C., HANCIOĐLU İ., GEN E. U., ALTUNKAYA M. U., CANBAK O.,  ZSU E.  
Otomatik Kontrol T rk Milli Komitesi Ulusal Toplantısı (TOK 2014), Kocaeli, Turkey, 11 - 13 September 2014, pp.721-726
- XVII. **Bulanık Zaman Serisi Modellerinde  yelik Fonksiyonlarının Belirlenmesine Y nelik Yeni Bir YaklaŐım**  
BAŐYİĐİT A. İ., ULU C., G ZELKAYA M.  
Otomatik Kontrol T rk Milli Komitesi Ulusal Toplantısı (TOK 2014), Kocaeli, Turkey, 11 - 13 September 2014, pp.600-606
- XVIII. **A New Fuzzy Time Series Model Using Triangular and Trapezoidal Membership Functions**  
BAŐYİĐİT A. İ., ULU C., G ZELKAYA M.  
International work-conference on Time Series (ITISE 2014), Granada, Spain, 25 - 27 June 2014, pp.634-644
- XIX. **Design of a 500 kW Doubly Fed Induction Generator for Wind Turbine Applications**  
ULU C., K M RG Z KIRIŐ G.  
Power and Energy / 807: Intelligent Systems and Control / 808: Technology for Education and Learning, Marina del Rey, USA, 11 - 13 November 2013, pp.98-103
- XX. **  insansız sualtı aracı tasarımının karŐılaŐtırılması**  
ULU C., HANCIOĐLU İ., GEN E. U., ALTUNKAYA M. U., CANBAK O.,  ZSU E.  
Otomatik Kontrol T rk Milli Komitesi Ulusal Toplantısı (TOK 2013), Malatya, Turkey, 26 - 28 September 2013, pp.582-588
- XXI. **Sınırlandırılmış tip 2 bulanık k melerin tanımlanmasına y nelik yeni bir yaklaŐım**  
ULU C.  
Otomatik Kontrol T rk Milli Komitesi Ulusal Toplantısı (TOK 2013), Malatya, Turkey, 26 - 28 September 2013, pp.248-254
- XXII. **A new approach to an exact inversion of TSK fuzzy systems**

- Ulu C., Güzelkaya M., Eksin İ.  
2013 International Conference on Technological Advances in Electrical, Electronics and Computer Engineering, TAEECE 2013, Konya, Turkey, 9 - 11 May 2013, pp.262-265
- XXIII. **Design of an Inspection Robot for Search and Rescue Operations in Mines**  
ULU C., EL KAHLOUT Y., HANCIOĞLU İ., CANBAK O., GENÇ E. U., MEHMET BAHAR D.  
23rd International Mining Congress and Exhibition of Turkey (IMCET 2013), 16 - 19 April 2013, pp.1913-1921
- XXIV. **Exact inversion of TSK fuzzy systems with linear consequents**  
Ulu C., Güzelkaya M., Eksin İ.  
2013 24th International Conference on Information, Communication and Automation Technologies, ICAT 2013, Sarajevo, Bosnia And Herzegovina, 30 October - 01 November 2013
- XXV. **A New Type Reduction Method for Piecewise Linear Interval Type 2 Fuzzy Sets**  
ULU C., GÜZELKAYA M., EKSİN İ.  
2nd World Conference on Soft Computing, Baku, Azerbaijan, 3 - 05 December 2012, pp.494-498
- XXVI. **Rüzgar Türbini Uygulamaları için 500 kW Çift Beslemeli Asenkron Generatör Tasarımı**  
ULU C., KÖMÜRGÖZ KIRIŞ G.  
Elektrik-Elektronik ve Bilgisayar Mühendisliği Sempozyumu (ELECO 2012), Bursa, Turkey, 29 November - 01 December 2012, pp.46-50
- XXVII. **Madenlerde Kullanılan Arama ve Kurtarma Robotu Tasarımı**  
ULU C., EL KAHLOUT Y., HANCIOĞLU İ., CANBAK O., GENÇ E. U., BAHAR D. M.  
Otomatik Kontrol Türk Milli Komitesi Ulusal Toplantısı (TOK 2012), Niğde, Turkey, 11 - 13 October 2012, pp.590-596
- XXVIII. **Granular interval type-2 membership functions and modeling application on a nonlinear system**  
Ulu C., Güzelkaya M., Eksin İ.  
12th IEEE International Symposium on Computational Intelligence and Informatics, CINTI 2011, Budapest, Hungary, 21 - 22 November 2011, pp.397-402
- XXIX. **MOSA Modüler İnsansız Sualtı Aracı**  
ULU C., GENÇ E. U., HANCIOĞLU İ., ALTUNKAYA M. U., CANBAK O., ÖZSU E.  
Otomatik Kontrol Türk Milli Komitesi Ulusal Toplantısı (TOK 2011), İzmir, Turkey, 14 - 16 September 2011, pp.537-543
- XXX. **A dynamic defuzzification method for interval Type-2 Fuzzy Logic Controllers**  
Ulu C., Güzelkaya M., Eksin İ.  
2011 IEEE International Conference on Mechatronics, ICM 2011, İstanbul, Turkey, 13 - 15 April 2011, pp.318-323
- XXXI. **Bulanık Kontrolör Tasarımında Üyelik Fonksiyonlarının Dilsel Biçimlendiricilerle Çevrimiçi Ayarlanması**  
ULU C., EKSİN İ., GÜZELKAYA M.  
Otomatik Kontrol Türk Milli Komitesi Ulusal Toplantısı (TOK 2008), İstanbul, Turkey, 13 - 15 November 2008, pp.376-381

## Supported Projects

- ULU C., Project Supported by Other Official Institutions, 12"-16" Doğalgaz Dağıtım Boru Hatları İçin Boru İçi Denetleme Robotu Sistemi Geliştirilmesi, 2017 - Continues
- Koyun A., Ulu C., Erkan K., Yılmaz C., Livatyalı H., Project Supported by Other Official Institutions, Sürekli Atıksu İzleme Sistemleri (SAİS) Bileşenlerinin Yerli Üretimle Yapılabilirliğinin Araştırılması ve Geliştirilmesi, 2020 - 2021
- ULU C., Project Supported by Other Official Institutions, Kuvvetli Yer Hareketleri İzleme, Kayıt ve Kumanda Sistemi - 2, 2016 - 2018
- ULU C., TÜBİTAK Project, Elektrikli Araçlar için Elektronik Kontrol Ünitesi, Elektrik Tahrik Sistemi ve Batarya Grubu Geliştirilmesi Projesi, 2013 - 2016
- ULU C., Project Supported by Other Official Institutions, MAM-RV TÜBİTAK Marmara Araştırma Gemisi Sualtı Araştırma Altyapısının Geliştirilmesi Projesi, 2013 - 2016

ULU C., Project Supported by Other Official Institutions, R/V TÜBİTAK Marmara için ROV Sistemi Geliştirilmesi Projesi, 2013 - 2015  
ULU C., TUBITAK Project, Milli Rüzgar Enerjisi Sistemleri Geliştirilmesi (MİLRES), 2011 - 2014  
ULU C., Project Supported by Other Official Institutions, Uzaktan Kontrollü Maden Robotu, 2011 - 2013  
ULU C., TUBITAK Project, Milli PAP(ROV) Cihazı Geliştirilmesi, 2006 - 2013  
ULU C., Project Supported by Other Official Institutions, Modüler Sualtı Aracı (MOSA) Geliştirilmesi, 2009 - 2009

## Scientific Refereeing

INTERNATIONAL CONFERENCE on ELECTRICAL and ELECTRONICS ENGINEERING, Conference Paper (Full Text), July 2019  
TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, SCI Journal, May 2019  
TUBITAK Project, 1003 - Priority Areas R&D Projects Support Program, TÜBİTAK, Turkey, November 2018  
TUBITAK Project, 1003 - Priority Areas R&D Projects Support Program, TÜBİTAK, Turkey, November 2018  
TUBITAK Project, 1003 - Priority Areas R&D Projects Support Program, TÜBİTAK, Turkey, November 2018  
TUBITAK Project, 1003 - Priority Areas R&D Projects Support Program, TÜBİTAK, Turkey, November 2018  
CEIT 2018, Conference Paper (Full Text), July 2018  
Technopark, MARTEK, Turkey, June 2018  
Technopark, MARTEK, Turkey, March 2018  
INTERNATIONAL JOURNAL OF APPROXIMATE REASONING, National Scientific Refreed Journal, July 2017  
EXPERT SYSTEMS WITH APPLICATIONS, National Scientific Refreed Journal, June 2017  
IEEE TRANSACTIONS ON CYBERNETICS, SCI Journal, May 2017  
TRANSACTIONS OF THE INSTITUTE OF MEASUREMENT AND CONTROL, SCI Journal, May 2017  
IEEE TRANSACTIONS ON FUZZY SYSTEMS, SCI Journal, April 2017  
IEEE International Conference on Mechatronics, Conference Paper (Full Text), May 2011

## Metrics

Publication: 52  
Citation (WoS): 65  
Citation (Scopus): 121  
H-Index (WoS): 5  
H-Index (Scopus): 6

## Non Academic Experience

Other Public Institution, Tübitak Marmara Araştırma Merkezi, Robotik Ve Otomasyon Teknolojileri  
TÜBİTAK Marmara Araştırma Merkezi, Enerji Enstitüsü