

# Prof. CAN ULAŞ DOĞRUER

## Personal Information

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## International Researcher IDs

Publons / Web Of Science ResearcherID: N-3255-2018

Yoksis Researcher ID: 108797

## Education Information

Doctorate, Middle East Technical University, Graduate School Of Natural And Applied Sciences, Makina Mühendisliği Bölümü, Turkey 2003 - 2009

Postgraduate, Middle East Technical University, Graduate School Of Natural And Applied Sciences, Makina Mühendisliği Bölümü, Turkey 1996 - 1999

Undergraduate, Middle East Technical University, Faculty Of Engineering, Department Of Mechanical Engineering, Turkey 1991 - 1996

## Foreign Languages

English, C1 Advanced

## Dissertations

Doctorate, Global urban localization of an outdoor mobiler robot using satellite images, Orta Doğu Teknik Üniversitesi, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, 2009

Postgraduate, Dynamic analysis of spur gears, Orta Doğu Teknik Üniversitesi, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, 1999

## Research Areas

Mechanical Engineering, Machine Theory and Dynamics, Mechanical Vibrations, Engineering and Technology

## Academic Titles / Tasks

Associate Professor, Hacettepe University, Mühendislik Fakültesi, Makina Mühendisliği Bölümü, 2020 - Continues

Assistant Professor, Hacettepe University, Mühendislik Fakültesi, Makina Mühendisliği Bölümü, 2018 - 2020

Assistant Professor, Hacettepe University, Mühendislik Fakültesi, Makina Mühendisliği Bölümü, 2013 - 2018

Research Assistant, University of Florida, Faculty Of Engineering, Department Of Mecahnical And Aerospace Engineering, 2012 - 2013

Lecturer PhD, Hacettepe University, Mühendislik Fakültesi, Makina Mühendisliği Bölümü, 2009 - 2013

Research Assistant, Hacettepe University, Mühendislik Fakültesi, Makina Mühendisliği Bölümü, 2004 - 2009

Research Assistant, Fachhochschule Esslingen, Faculty Of Engineering, Department Of Automotive Engineering, 2006 - 2006

Research Assistant, Middle East Technical University, Faculty Of Engineering, Makine Mühendisliği Bölümü, 1996 - 1999

## Courses

MAKİNA MÜH. DE ÖZEL PROBLEMLER, Postgraduate, 2017 - 2018

İLERİ MEKANİK TİTREŞİMLER, Postgraduate, 2017 - 2018, 2016 - 2017

BİTİRME PROJESİ I, Undergraduate, 2016 - 2017

ÖZEL KONULAR, Postgraduate, 2016 - 2017

MÜHENDİSLER İÇİN UYG. MATEMATİK, Undergraduate, 2016 - 2017

BİTİRME PROJESİ II, Undergraduate, 2016 - 2017

MEKANİK TİTREŞİMLER, Undergraduate, 2016 - 2017

BİLGİSAYAR PROGRAMLAMA, Undergraduate, 2016 - 2017

## Advising Theses

Doğruer C. U., Reduction of transverse vibration of a serpentine belt system: Model predictive control of a belt tensioner, Postgraduate, V.MURAT(Student), 2017

Doğruer C. U., Servo control of an underactuated power transmission system: Analysis of a spur gear pair, Postgraduate, A.KHOSHVAGHT(Student), 2015

Doğruer C. U., Hareketli robotların kinematik değişkenlerinin tahmin edilmesi için test platform tasarımı, Postgraduate, S.HACIOĞLU(Student), 2014

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

- I. **Optimal process parameter determination in selective laser melting via machine learning-guided sequential quadratic programming**  
Toprak C. B., DOĞRUER C. U.  
PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART C-JOURNAL OF MECHANICAL ENGINEERING SCIENCE, 2024 (SCI-Expanded)
- II. **Finite Element Analysis and Machine Learning in the Loop Additive Manufacturing Process Parameter Optimization to Acquire the Desired Dynamics of Manufactured Parts**  
TOPRAK C. B., DOĞRUER C. U.  
3D PRINTING AND ADDITIVE MANUFACTURING, 2024 (SCI-Expanded)
- III. **A Critical Review of Machine Learning Methods Used in Metal Powder Bed Fusion Process to Predict Part Properties**  
Toprak C. B., Doğruer C. U.  
International Journal of Precision Engineering and Manufacturing, vol.25, no.2, pp.429-452, 2024 (SCI-Expanded)
- IV. **Multiple Model Switching Control of Linear Time-Invariant Systems**  
Doğruer C. U., Yildirim B.  
ARABIAN JOURNAL FOR SCIENCE AND ENGINEERING, vol.1, pp.1-15, 2023 (SCI-Expanded)
- V. **Neuro-fuzzy modelling methods for relative density prediction of stainless steel 316L metal parts produced by additive manufacturing technique**  
Toprak C. B., DOĞRUER C. U.  
Journal of Mechanical Science and Technology, vol.37, no.1, pp.107-118, 2023 (SCI-Expanded)
- VI. **Simulation of Planar Mechanism Dynamics with Index-I Formulation and Projection Method Solution**

## **of Differential Algebraic Equations**

Dogruer C. U., YILDIRIM B.

ARABIAN JOURNAL FOR SCIENCE AND ENGINEERING, vol.47, no.7, pp.9305-9317, 2022 (SCI-Expanded)

- VII. **Constrained model predictive control of a vehicle suspension using Laguerre polynomials**  
DOĞRUER C. U.  
PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART C-JOURNAL OF MECHANICAL ENGINEERING SCIENCE, vol.234, no.6, pp.1253-1268, 2020 (SCI-Expanded)
- VIII. **Design of a vibration-free platform: Stabilization of a beam mounted on bicycle model of a car**  
DOĞRUER C. U., YILDIRIM B.  
PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART C-JOURNAL OF MECHANICAL ENGINEERING SCIENCE, vol.232, no.22, pp.4113-4127, 2018 (SCI-Expanded)
- IX. **Assignment of poles to a large-scale structure with state-feedback controllers in orthogonal subspaces**  
DOĞRUER C. U.  
JOURNAL OF THE BRAZILIAN SOCIETY OF MECHANICAL SCIENCES AND ENGINEERING, vol.39, no.5, pp.1509-1520, 2017 (SCI-Expanded)
- X. **Active vibration control of a single-stage spur gearbox**  
DOĞRUER C. U., Pirsoltan A. K.  
MECHANICAL SYSTEMS AND SIGNAL PROCESSING, vol.85, pp.429-444, 2017 (SCI-Expanded)
- XI. **Position estimation for timing belt drives of precision machinery using structured neural networks**  
Kilic E., DOĞRUER C. U., DÖLEN M., KOKU A. B.  
MECHANICAL SYSTEMS AND SIGNAL PROCESSING, vol.29, pp.343-361, 2012 (SCI-Expanded)
- XII. **Outdoor mapping and localization using satellite images**  
DOĞRUER C. U., KOKU A. B., DOLEN M.  
ROBOTICA, vol.28, pp.1001-1012, 2010 (SCI-Expanded)
- XIII. **Novel solutions for Global Urban Localization**  
DOĞRUER C. U., KOKU A. B., DÖLEN M.  
ROBOTICS AND AUTONOMOUS SYSTEMS, vol.58, no.5, pp.634-647, 2010 (SCI-Expanded)
- XIV. **Global urban localization of an outdoor mobile robot with genetic algorithms**  
DOĞRUER C. U., Koku A. B., DÖLEN M.  
Springer Tracts in Advanced Robotics, vol.44, pp.103-112, 2008 (SCI-Expanded)
- XV. **Nonlinear dynamic modeling of gear-shaft-disk-bearing systems using finite elements and describing functions**  
MALIHA R., Dogruer C. U., OZGUVEN H.  
JOURNAL OF MECHANICAL DESIGN, vol.126, no.3, pp.534-541, 2004 (SCI-Expanded)

## **Articles Published in Other Journals**

- I. **Advancing modal analysis of mechanical linkages via differential algebraic equations**  
DOĞRUER C. U., TOPRAK C. B., YILDIRIM B.  
JOURNAL OF POLYTECHNIC-POLITEKNIK DERGISI, 2024 (ESCI)
- II. **Optimizing Truss Dynamics: A Multi-Objective Approach to Modify Natural Frequencies and Mode Shapes with Geometric Constraints**  
Doğruer C. U., Toprak C. B., Yildirim B.  
Gazi Üniversitesi Fen Bilimleri Dergisi Part C: Tasarım ve Teknoloji, vol.12, no.1, pp.354-365, 2024 (Peer-Reviewed Journal)
- III. **Çeyrek Araç Model Konforunun İyileştirilmesi için Kısıt Koşulları Altında Çalışan Model Öngörülü Denetleyici Tasarımı**  
DOĞRUER C. U.  
Gazi Üniversitesi Fen Bilimleri Dergisi Part C: Tasarım ve Teknoloji, vol.5, no.2, pp.271-281, 2017 (Peer-Reviewed)

## Refereed Congress / Symposium Publications in Proceedings

- I. **Model Predictive Control Using First/Third Order Splines**  
Doğruer C. U.  
2023 IEEE 11th International Conference on Systems and Control (ICSC), Susah, Tunisia, 18 - 20 December 2023, pp.541-546
- II. **Model Predictive Control Using Input Signal Approximated by Cubic LSE Splines**  
Doğruer C. U.  
2023 IEEE 11th International Conference on Systems and Control (ICSC), Susah, Tunisia, 18 - 20 December 2023, pp.547-552
- III. **Model Predictive Control Parameterized in Terms of Orthogonal Polynomials**  
Doğruer C. U.  
2023 IEEE 11th International Conference on Systems and Control (ICSC), Susah, Tunisia, 18 - 20 December 2023, pp.528-534
- IV. **Model Predictive Control of a Flexible Spacecraft with Constraints on Torques**  
Koc A. B., Olca M., DOĞRUER C. U.  
10th International Conference on Recent Advances in Air and Space Technologies, RAST 2023, İstanbul, Turkey, 7 - 09 June 2023
- V. **Dual-Mode Infinite Horizon Constrained Model Predictive Control Parameterized in Terms of Laguerre Polynomials**  
DOĞRUER C. U.  
13th Asian Control Conference, ASCC 2022, Jeju, South Korea, 4 - 07 May 2022, pp.209-214
- VI. **Stability Condition for a Class of Finite Memory Integral-Model Predictive Control**  
DOĞRUER C. U.  
13th Asian Control Conference, ASCC 2022, Jeju, South Korea, 4 - 07 May 2022, pp.215-220
- VII. **Optimal Mechanical Design of Half-Car Vehicle Suspension System Components**  
DOĞRUER C. U.  
13th Asian Control Conference, ASCC 2022, Jeju, South Korea, 4 - 07 May 2022, pp.1302-1308
- VIII. **Switching Optimal Modal Control of Linear Time-Invariant Model of a Structural System**  
DOĞRUER C. U., YILDIRIM B.  
2021 25th International Conference on System Theory, Control and Computing (ICSTCC), Iasi, Romania, 20 - 22 October 2021
- IX. **Adaptive Control of Nonlinear Spur Gear Dynamics with Parametric Disturbance Rejection**  
DOĞRUER C. U., YILMAZ K. B., YILDIRIM B.  
2019 23rd International Conference on System Theory, Control and Computing (ICSTCC), Sinaia, Romania, 9 - 11 October 2019, pp.373-378
- X. **Trajectory tracking with MPC by maximizing the autocorrelation of heading angle**  
DOĞRUER C. U.  
23rd International Conference on System Theory, Control and Computing, ICSTCC 2019, Sinaia, Romania, 9 - 11 October 2019, pp.19-24
- XI. **Optimal linear regulator with prescribed poles minimizing the Frobenius norm of a cost function**  
DOĞRUER C. U.  
23rd International Conference on System Theory, Control and Computing, ICSTCC 2019, Sinaia, Romania, 9 - 11 October 2019, pp.721-726
- XII. **An integral-model predictive controller with finite memory for trajectory tracking**  
DOĞRUER C. U.  
2019 European Conference on Mobile Robots, ECMR 2019, Prague, Czech Republic, 4 - 06 September 2019
- XIII. **Improving Ride-Comfort of a Quarter-Car Model using Modal Control**

- DOĞRUER C. U.  
7th IEEE International Conference on Control, Mechatronics and Automation (ICCMA), Delft, Netherlands, 6 - 08 November 2019, pp.237-242
- XIV. **Trajectory Tracking Control of a Mobile Robot with Model Predictive Controller and Observer**  
DOĞRUER C. U.  
7th IEEE International Conference on Control, Mechatronics and Automation (ICCMA), Delft, Netherlands, 6 - 08 November 2019, pp.179-184
- XV. **Multiple Model Adaptive Estimator with Model Set Update**  
DOĞRUER C. U.  
IEEE International Conference on Advanced Intelligent Mechatronics (AIM), Banff, Canada, 12 - 15 July 2016, pp.864-869
- XVI. **Optimal Trajectory Tracking under Parametric Uncertainty**  
DOĞRUER C. U.  
IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM), Busan, South Korea, 7 - 11 July 2015, pp.706-712
- XVII. **Estimating Mobile Robot Odometer Error with LSE Method**  
DOĞRUER C. U.  
International Conference of Control, Dynamic Systems, and Robotics (CDSR) 14, Ottawa, Canada, 15 - 17 May 2014
- XVIII. **Estimation of Odometer Parameters with MMAE and LSE**  
DOĞRUER C. U.  
IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM), Besançon, France, 8 - 11 July 2014, pp.1728-1733
- XIX. **Estimation mobile robot odometer error with LSE method**  
DOĞRUER C. U.  
The International Conference of Control, Dynamic Systems, and Robotics, CDSR 2014, Ottawa, Canada, 15 - 16 May 2017
- XX. **Online Identification of Odometer Parameters of a Mobile Robot**  
DOĞRUER C. U.  
International Joint Conference on SOCO, CISIS, ICEUTE, Bilbao, Spain, 25 - 27 June 2014, vol.299, pp.195-206
- XXI. **Global urban localization of an outdoor mobile robot with genetic algorithms**  
DOĞRUER C. U., KOKU A. B., DÖLEN M.  
EUROPEAN ROBOTICS SYMPOSIUM 2008, Prague, Czech Republic, 26 - 27 March 2008, vol.44, pp.103
- XXII. **Global Urban Localization of Outdoor Mobile Robots Using Satellite Images**  
DOĞRUER C. U., Koku B., DÖLEN M.  
IEEE/RSJ International Conference on Intelligent Robots and Systems, Nice, France, 22 - 26 September 2008, pp.3927-3928
- XXIII. **Nonlinear position estimators based on artificial neural networks for low costs manufacturing systems**  
DOĞRUER C. U., DÖLEN M., KOKU A. B., KILIÇ E.  
WESIC 07, Warszawa, Poland, 20 - 22 June 2007
- XXIV. **Novel position estimators for timing belt drivers**  
KILIÇ E., DÖLEN M., KOKU A. B., DOĞRUER C. U.  
WESIC 07, Warszawa, Poland, 21 - 22 June 2007
- XXV. **A novel soft-computing technique to segment satellite images for mobile robot localization and navigation**  
DOĞRUER C. U., Koku B., DÖLEN M.  
IEEE/RSJ International Conference on Intelligent Robots and Systems, California, United States Of America, 29 October - 02 November 2007, pp.2083-2084
- XXVI. **Nonlinear Dynamic Modeling of Gear Shaft Disk Bearing Systems Using Finite Elements and Describing Functions**  
DOĞRUER C. U., ÖZGÜVEN H. N.

## Supported Projects

DOĞRUER C. U., Pirsoltan A. K., Project Supported by Higher Education Institutions, Dişli Kontrol Sistemi, 2016 - 2019  
DOĞRUER C. U., Project Supported by Higher Education Institutions, Sıralı Model Seti Adaptasyonu ile Birden Fazla Model Tabanlı Adaptif Tahmin: Değişken Uzayında Arama, 2016 - 2016  
DOĞRUER C. U., Project Supported by Higher Education Institutions, Parametrik Belirsizlik Altında Optimal Yörünge Takibi, 2015 - 2015

## Metrics

Publication: 45  
Citation (WoS): 65  
Citation (Scopus): 83  
H-Index (WoS): 5  
H-Index (Scopus): 5

## Non Academic Experience

ASELSAN  
TOYOTA  
TÜBİTAK-SAGE