

## Asst. Prof. YUNUS EMRE KARABACAK

### Personal Information

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### International Researcher IDs

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### Education Information

Doctorate, Karadeniz Technical University, Fen Bilimleri Enstitüsü, Makine Mühendisliği, Turkey 2016 - 2021

Postgraduate, Karadeniz Technical University, Fen Bilimleri Enstitüsü, Makine Mühendisliği, Turkey 2008 - 2013

Undergraduate, Karadeniz Technical University, Mühendislik Fakültesi, Makine Mühendisliği, Turkey 2003 - 2005

### Foreign Languages

English, B2 Upper Intermediate

### Dissertations

Doctorate, Sonsuz vidalı redüktörlerde yapay zekâ teknikleri ile arızaların tespiti ve sınıflandırılması, Karadeniz Technical University, Fen Bilimleri Enstitüsü, 2021

Postgraduate, Bor katkılı yağların motor performansına etkisinin incelenmesi, Karadeniz Technical University, Fen Bilimleri Enstitüsü, 2013

### Research Areas

Construction and Manufacturing, Predictive and Preventive Maintenance, Mechatronics

### Academic Titles / Tasks

Assistant Professor, Karadeniz Technical University, Mühendislik Fakültesi, Makine Mühendisliği, 2023 - Continues

### Courses

Bitirme Projesi, Undergraduate, 2023 - 2024

Makina Elemanları, Undergraduate, 2024 - 2025

İleri Kestirimci Bakım Teknikleri, Doctorate, 2024 - 2025

Makina Elemanları, Undergraduate, 2024 - 2025

Mühendislik Tasarımı, Undergraduate, 2024 - 2025  
Makina Müh. Deneyler -1, Undergraduate, 2024 - 2025  
Predictive Maintenance Techniques, Undergraduate, 2023 - 2024  
Makina Elemanları 1, Undergraduate, 2024 - 2025  
Bilgisayar Destekli Mühendislik Çizimi, Undergraduate, 2023 - 2024  
İleri Kestirimci Bakım Teknikleri, Doctorate, 2023 - 2024  
Mühendislik Çizimi , Undergraduate, 2023 - 2024  
Bitirme Projesi, Undergraduate, 2022 - 2023  
Mühendislik Tasarımı, Undergraduate, 2022 - 2023  
Makina Müh. Deneyler - I, Undergraduate, 2023 - 2024

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

- I. **Machine-learning-based modeling of saturated flow boiling in pin-fin micro heat sinks with expanding flow passages**  
MARKAL B., KARABACAK Y. E., EVCİMEN A.  
INTERNATIONAL COMMUNICATIONS IN HEAT AND MASS TRANSFER, vol.158, 2024 (SCI-Expanded)
- II. **Investigating the Effects of Oil Additives on the Tribological Performance of Hydrodynamic Journal Bearings: A Study With Hazelnut Oil in Boundary and Mixed Lubrication Regimes**  
Baş H., Karabacak Y. E.  
LUBRICATION SCIENCE, pp.1-28, 2024 (SCI-Expanded)
- III. **Predicting mechanical behavior of different thin-walled tubes using data-driven models**  
KULEYİN H., KARABACAK Y. E., GÜMRÜK R.  
Materials Today Communications, vol.40, 2024 (SCI-Expanded)
- IV. **Intelligent milling tool wear estimation based on machine learning algorithms**  
Karabacak Y. E.  
JOURNAL OF MECHANICAL SCIENCE AND TECHNOLOGY, vol.38, no.2, pp.1-16, 2024 (SCI-Expanded)
- V. **Prediction of friction coefficient and torque in self-lubricating polymer radial bearings produced by additive manufacturing: A machine learning approach**  
BAŞ H., KARABACAK Y. E.  
PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART J-JOURNAL OF ENGINEERING TRIBOLOGY, vol.237, no.11, pp.2014-2038, 2023 (SCI-Expanded)
- VI. **Machine learning-based prediction of friction torque and friction coefficient in statically loaded radial journal bearings**  
BAŞ H., KARABACAK Y. E.  
TRIBOLOGY INTERNATIONAL, vol.186, 2023 (SCI-Expanded)
- VII. **Assessing the Influence of Micro Lubricant Additives on Worm Gearbox Power Consumption: A Tribological Investigation Utilizing Hazelnut Oil-Based Lubricants**  
Karabacak Y. E., Baş H.  
TRIBOLOGY TRANSACTIONS, pp.1-19, 2023 (SCI-Expanded)
- VIII. **Triboinformatic modeling of the friction force and friction coefficient in a cam-follower contact using machine learning algorithms**  
BAŞ H., KARABACAK Y. E.  
Tribology International, vol.181, 2023 (SCI-Expanded)
- IX. **Deep learning-based CNC milling tool wear stage estimation with multi-signal analysis**  
KARABACAK Y. E.  
EKSPLOATACJA I NIEZAWODNOSC-MAINTENANCE AND RELIABILITY, vol.25, no.3, 2023 (SCI-Expanded)
- X. **Experimental investigation of efficiency of worm gears and modeling of power loss through artificial neural networks**  
Karabacak Y. E., Baş H.

- Measurement: Journal of the International Measurement Confederation, vol.202, 2022 (SCI-Expanded)
- XI. **Common spatial pattern-based feature extraction and worm gear fault detection through vibration and acoustic measurements**  
Karabacak Y. E., Gürsel Özmen N.  
MEASUREMENT, vol.187, 2022 (SCI-Expanded)
- XII. **Intelligent worm gearbox fault diagnosis under various working conditions using vibration, sound and thermal features**  
Karabacak Y. E., Gürsel Özmen N., Gümüşel L.  
APPLIED ACOUSTICS, vol.186, 2022 (SCI-Expanded)
- XIII. **WORM GEAR CONDITION MONITORING AND FAULT DETECTION FROM THERMAL IMAGES VIA DEEP LEARNING METHOD**  
Karabacak Y. E., GÜRSEL ÖZMEN N., GÜMÜŞEL L.  
Eksploatacja I Niezawodnosc-Maintenance And Reliability, vol.22, no.3, pp.544-556, 2020 (SCI-Expanded)
- XIV. **Investigation of the Effects of Boron Additives on the Performance of Engine Oil**  
Baş H., Karabacak Y. E.  
TRIBOLOGY TRANSACTIONS, vol.57, no.4, pp.740-748, 2014 (SCI-Expanded)

### Articles Published in Other Journals

- I. **A New Bearing Fault Diagnosis Approach based on Common Spatial Pattern Features**  
GÜRSEL ÖZMEN N., KARABACAK Y. E.  
ENGINEERING SCIENCES, vol.12, no.4, pp.1545-1557, 2023 (Peer-Reviewed Journal)
- II. **Rulmanlarda Titreşim Verilerinden Durum İzleme Ve Arıza Teşhisi İçin Derin Öğrenme Yönteminin Uygulanması**  
GÜRSEL ÖZMEN N., Karabacak Y. E.  
SELCUK UNIVERSITY JOURNAL OF ENGINEERING, SCIENCE AND TECHNOLOGY, vol.10, no.2, pp.346-365, 2022 (Peer-Reviewed Journal)
- III. **Investigation of Tribological Properties of TiO<sub>2</sub>, MoS<sub>2</sub> and CaF<sub>2</sub> Particles as Vegetable Oil Additives and Their Effects on Gearbox Performance**  
Baş H., Karabacak Y. E.  
Journal of Bio- and Tribo-Corrosion, vol.8, no.2, 2022 (Scopus)

### Books & Book Chapters

- I. **Data-Driven Predictive Modeling of Cylinder Pressure: A Comparative Analysis of Gaussian Process Regression, Artificial Neural Networks, and Ensembles of Trees**  
GÜLÜM M., KARABACAK Y. E.  
in: Interdisciplinary studies on contemporary research practices in engineering in the 21st century-IV, Prof. Dr. Kamil Kaygusuz, Editor, Özgür Yayınları, Gaziantep, pp.49-65, 2023
- II. **MACHINE LEARNING MODELLING OF ISENTROPIC COMPRESSIBILITY OF BINARY BLENDS OF OXYGENATED ADDITIVES AND HYDROCARBONS**  
GÜLÜM M., KARABACAK Y. E.  
in: International Theory, Research and Reviews in Engineering - October 2023, Prof. Dr. Coşkun ÖZALP, Assoc. Prof. Dr. Selahattin BARDAK, Editor, Serüven Yayınevi, Ankara, pp.21-32, 2023

### Refereed Congress / Symposium Publications in Proceedings

- I. **PREDICTION OF ISOBARIC MOLAR HEAT CAPACITY OF ETHYL OCTANOATE AND ETHYL DECANOATE**

## USING LINEAR REGRESSION AND SUPPORT VECTOR MACHINE

Gülüm M., Karabacak Y. E.

14TH INTERNATIONAL CONFERENCE ON "RECENT ENGINEERING AND TECHNOLOGY – 2023" (ICRET - 2023), Bengaluru, India, 25 June - 25 September 2023, pp.34

### II. Prediction of Speed of Sound of Biodiesel-Alcohol Blends using Artificial Neural Networks and Support Vector Machine

KARABACAK Y. E., GÜLÜM M.

International Conference on Innovation in Engineering & Management: Sustainability Through Creativity & Innovation (ICIEM'23), Mesra (Ranchi), India, 1 - 02 June 2023, pp.69

### III. ESTIMATING SURFACE TENSION AND REFRACTIVE INDEX OF BIODIESEL ALCOHOL BLENDS: A COMPARATIVE STUDY OF LINEAR REGRESSION AND REGRESSION TREES

GÜLÜM M., KARABACAK Y. E.

11th INTERNATIONAL CONFERENCE ON CONTEMPORARY ENGINEERING AND TECHNOLOGY – 2023, Chennai, India, 1 - 02 May 2023, pp.55-64

### IV. Makina Tasarımındaki Güncel Gelişmeler ve Gelecekteki Beklentiler

Karabacak Y. E., Baş H.

9. ULUSLARARASI MÜHENDİSLİK VE TEKNOLOJİ YÖNETİMİ KONGRESİ, İstanbul, Turkey, 29 April - 01 May 2023, pp.755-766

### V. Modeling Liquid Thermal Conductivity of Binary Mixtures Containing Methyl Myristate and n-Alkanes Using Artificial Neural Networks

Gülüm M., Karabacak Y. E.

2nd International Conference on Energy Resources and Technologies for Sustainable Development, Bengaluru, India, 27 April - 28 September 2023, pp.74

### VI. Performance Comparison of ANN Based Fault Detection of Worm Gears on Different Data Sets

Karabacak Y. E., Gürsel Özmen N., Gümüşel L.

The 11th International Symposium on Intelligent Manufacturing and Service Systems (IMSS), Sakarya, Turkey, 27 - 29 May 2021, pp.668-680

### VII. Classification of Worm Gearbox Faults by SVM and K-NN

Karabacak Y. E., Gürsel Özmen N., Gümüşel L.

11th International Symposium on Intelligent Manufacturing and Service Systems, Sakarya, Turkey, 27 - 29 May 2021, pp.657-667

### VIII. Sonsuz Vidalı Redüktörlerin Kestirimci ve Önleyici Bakım Çalışmalarına Yönelik Geliştirilmiş Bir Deney Düzenegi

Karabacak Y. E., GÜRSEL ÖZMEN N., GÜMÜŞEL L.

International Conference on Artificial Intelligence and Applied Mathematics in Engineering (ICAAME 2019), Antalya, Turkey, 20 April 2019, pp.18

### IX. Rulmanlarda Bilezik Arızalarının Yapay Sinir Ağları ile Tespiti ve Sınıflandırılması

karabacak Y. E., KAHRAMAN H. T., GÜMÜŞEL L., YILMAZ C.

Akıllı sistemlerde yenilikler ve uygulamaları, 5 - 07 October 2017

## Supported Projects

Karabacak Y. E., TUBITAK Project, Titreşim Analizi Ve Makine Öğrenmesi Tekniklerine Dayalı Olarak Hidrodinamik Kaymalı Yataklarda Arıza Tespiti, 2024 - 2025

Karabacak Y. E., TUBITAK Project, YENİDEN KULLANILABİLİR MEKANİK ROKET AYRILMA SİSTEMİ TASARIMI ve İMALATI, 2023 - 2024