

## Prof. ERDAL EMEL

### Personal Information

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**Address:** Industrial Engineering Dept. Faculty of Engineering Gorukle Campus Bursa ULUDAĞ UNIVERSITY

### International Researcher IDs

ScholarID: AU0ZyuIAAAAJ

ORCID: 0000-0002-9220-7353

Publons / Web Of Science ResearcherID: N-8691-2014

ScopusID: 6602919521

Yoksis Researcher ID: 6326

### Education Information

Doctorate, The University of Michigan, Rackham Graduate School of Engineering, Mechanical Engineering And Applied Mechanics, United States Of America 1983 - 1987

Postgraduate, The University of Michigan, Rackham Graduate School of Engineering, Mechanical Engineering and Applied Mechanics, United States Of America 1982 - 1983

Undergraduate, Istanbul Technical University, Makine Fakültesi, Makine Mühendisliği Bölümü, Turkey 1976 - 1981

### Foreign Languages

German, A2 Elementary

English, C1 Advanced

### Dissertations

Doctorate, Identification of the metal cutting process by pattern recognition analysisi of acoutic emission and force signals, The University of Michigan, Rackham Graduate School, Mechanical Engineering And Applied Mechanics, 1987

### Research Areas

Neural Networks, Stochastic Processes, Heuristic Methods, Integer and Mixed Integer Programming, Simulation, Production Planning and Control, Network Design

### Academic Titles / Tasks

Professor, Bursa Uludağ University, MÜHENDİSLİK FAKÜLTESİ, ENDÜSTRİ MÜHENDİSLİĞİ, 1997 - Continues

Associate Professor, Bursa Uludağ University, MÜHENDİSLİK FAKÜLTESİ, ENDÜSTRİ MÜHENDİSLİĞİ, 1992 - 1997

Assistant Professor, Bursa Uludağ University, MÜHENDİSLİK FAKÜLTESİ, MAKİNA MÜHENDİSLİĞİ, 1988 - 1992

## Academic and Administrative Experience

Head of Department, Bursa Uludağ University, MÜHENDİSLİK FAKÜLTESİ, ENDÜSTRİ MÜHENDİSLİĞİ, 1993 - Continues  
Bursa Uludağ University, Mühendislik-Mimarlık Fakültesi, Endüstri Mühendisliği Bölümü, 1993 - Continues  
Bursa Uludağ University, Mühendislik-Mimarlık Fakültesi, Endüstri Mühendisliği Bölümü, 2004 - 2008  
Bursa Uludağ University, Mühendislik-Mimarlık Fakültesi, Endüstri Mühendisliği Bölümü, 1993 - 2005  
Bursa Uludağ University, Mühendislik-Mimarlık Fakültesi, Endüstri Mühendisliği Bölümü, 1999 - 1999

## Courses

Deep Neural Networks, Doctorate, 2023 - 2024  
BİLGİ SİSTEMLERİ VE YÖNETİMİ, Postgraduate, 2017 - 2018  
ÜRETİM SİSTEMLERİ, Postgraduate, 2017 - 2018  
SİNİRSEL AĞLAR, Doctorate, 2017 - 2018  
OBJECT ORIENTED PROGRAMMING, Undergraduate, 2017 - 2018  
SİMULASYON ANALİZİ, Postgraduate, 2017 - 2018  
ALGORİTMA TASARIMI VE ANALİZİ, Postgraduate, 2017 - 2018  
GİRİŞİMCİLİK, Postgraduate, 2017 - 2018  
İLERİ SİMULASYON TEKNİKLERİ, Doctorate, 2017 - 2018

## Advising Theses

EMEL E., Dynamic flexible job shop scheduling under stochastic demand, Postgraduate, Ü.Eraydın(Student), 2019  
EMEL E., The effect of earthquake risk on humanitarian logistics: Bursa, Postgraduate, E.Abbasoğlu(Student), 2019  
EMEL E., Collision-free and deadlock-free multi-tobot assembly line balancing, Postgraduate, İ.ENES(Student), 2017  
EMEL E., Modeling and solution of pickup-delivery vehicle routing problem with 2D loading constraints, Postgraduate, F.KAS(Student), 2016  
EMEL E., Comparative analysis and improvement of electromagnetism-like algorithm, Doctorate, A.YURTKURAN(Student), 2014  
EMEL E., Neural network rule extraction using heuristic methods, Postgraduate, Ö.KANGA(Student), 2014  
EMEL E., Improvement of healthcare processes by lean techniques, Postgraduate, D.ÖZDEMİR(Student), 2013  
EMEL E., Hybrid flowshop scheduling, Postgraduate, Ö.CİHANLI(Student), 2010  
EMEL E., Optimum control of the inventory accumulation in selective assembly processes, Postgraduate, V.HACIOĞLU(Student), 2010  
EMEL E., Optimization of logistics operations in Just-in-Time production systems, Postgraduate, İ.YILMAZ(Student), 2010  
EMEL E., A new electromagnetism-like algorithm for solving capacitated vehicle routing problems, Postgraduate, A.YURTKURAN(Student), 2009  
EMEL E., Modeling intellectual capital based innovative competitive advantage and an empirical execution, Postgraduate, G.AYZİT(Student), 2006  
EMEL E., The modelling of unit power and its optimization with goal programming, Postgraduate, T.ESİN(Student), 2004  
EMEL E., Vehicle routing problems with packing constraints, Postgraduate, A.TÜRKAY(Student), 2003  
EMEL E., Investigation and development of sensing and monitoring systems for metal cutting processes, Doctorate, İ.GÜCÜYENER(Student), 2002  
EMEL E., Programming of production scheduling algorithms, Postgraduate, S.AYŞE(Student), 1999  
EMEL E., Mixed-model assembly line balancing and sequencing, Postgraduate, B.YAĞMAHAN(Student), 1999  
EMEL E., Akustik yalıtım malzemelerinin sayısal ve deneysel yonden analizi ve geliştirilmesi, Doctorate, H.CAN(Student), 1999  
EMEL E., Determination of sound field characteristics formed by vibration from planar surfaces by sound intensity measurement method, Doctorate, M.AKİF(Student), 1998

EMEL E., Prooving solutions of production scheduling problems by a simülation approach, Postgraduate, Z.Temel(Student), 1997

EMEL E., Quality costs, Postgraduate, Ş.BAŞBUĞ(Student), 1997

EMEL E., Üretim çizelgeleme problemlerine simülasyon yaklaşımı ile çözüm geliştirme, Postgraduate, Z.TEMEL(Student), 1997

EMEL E., Seeting up and optimization of a just-in-time delivery system in auto industry, Postgraduate, S.BİRCAN(Student), 1997

EMEL E., Examination of the noise inside and outside the cabin by numerical acoustic analysis methods in motor vehicles "exos systems", Postgraduate, R.KURT(Student), 1993

EMEL E., Analysis of robot kinematics and dynamics and application of adaptive control methods, Postgraduate, O.ERTAN(Student), 1992

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

- I. **Remaining Useful Life Estimation of Turbofan Engines with Deep Learning Using Change-Point Detection Based Labeling and Feature Engineering**  
Ensarioglu K, İnkaya T, Emel E.  
APPLIED SCIENCES-BASEL, no.21, 2023 (SCI-Expanded)
- II. **Deep learning-based detection of aluminum casting defects and their types**  
Parlak İ. E., EMEL E.  
Engineering Applications of Artificial Intelligence, vol.118, 2023 (SCI-Expanded)
- III. **A novel artificial bee colony algorithm for the workforce scheduling and balancing problem in sub-assembly lines with limited buffers**  
Yurtkuran A., Yağmahan B., Emel E.  
APPLIED SOFT COMPUTING, vol.73, pp.767-782, 2018 (SCI-Expanded)
- IV. **An Enhanced Artificial Bee Colony Algorithm with Solution Acceptance Rule and Probabilistic Multisearch**  
YURTKURAN A., EMEL E.  
COMPUTATIONAL INTELLIGENCE AND NEUROSCIENCE, 2016 (SCI-Expanded)
- V. **A discrete artificial bee colony algorithm for single machine scheduling problems**  
YURTKURAN A., EMEL E.  
INTERNATIONAL JOURNAL OF PRODUCTION RESEARCH, vol.54, no.22, pp.6860-6878, 2016 (SCI-Expanded)
- VI. **An adaptive artificial bee colony algorithm for global optimization**  
YURTKURAN A., EMEL E.  
APPLIED MATHEMATICS AND COMPUTATION, vol.271, pp.1004-1023, 2015 (SCI-Expanded)
- VII. **MIXED-MODEL ASSEMBLY LINE BALANCING WITH SMOOTHING APPROACH BASED ON TABU SEARCH ALGORITHM**  
Yağmahan B., Emel E.  
JOURNAL OF THE FACULTY OF ENGINEERING AND ARCHITECTURE OF GAZI UNIVERSITY, vol.30, no.1, pp.57-69, 2015 (SCI-Expanded)
- VIII. **Efficient Constraint Handling in Electromagnetism-Like Algorithm for Traveling Salesman Problem with Time Windows**  
YURTKURAN A., EMEL E.  
SCIENTIFIC WORLD JOURNAL, 2014 (SCI-Expanded)
- IX. **A Modified Artificial Bee Colony Algorithm for p-Center Problems**  
YURTKURAN A., EMEL E.  
SCIENTIFIC WORLD JOURNAL, 2014 (SCI-Expanded)
- X. **A Clinical Decision Support System for Femoral Peripheral Arterial Disease Treatment**  
YURTKURAN A., TOK M., EMEL E.  
COMPUTATIONAL AND MATHEMATICAL METHODS IN MEDICINE, 2013 (SCI-Expanded)

- XI. **Optimal control of inventory accumulation in selective assembly processes**  
AKANSEL M., EMEL E., Hacıoglu V.  
INTERNATIONAL JOURNAL OF ADVANCED MANUFACTURING TECHNOLOGY, vol.56, pp.729-742, 2011 (SCI-Expanded)
- XII. **A new Hybrid Electromagnetism-like Algorithm for capacitated vehicle routing problems**  
YURTKURAN A., EMEL E.  
EXPERT SYSTEMS WITH APPLICATIONS, vol.37, no.4, pp.3427-3433, 2010 (SCI-Expanded)
- XIII. **A Fiber-Optic Bending Sensor for the Vibration Monitoring of CNC Face-Milling Machine**  
GÜCÜYENER İ., EMEL E.  
MECHATRONIC SYSTEMS AND MATERIALS III, pp.627-632, 2009 (SCI-Expanded)
- XIV. **ACOUSTIC-EMISSION MONITORING OF THE CUTTING PROCESS - NEGATING THE INFLUENCE OF VARYING CONDITIONS**  
EMEL E., KANNATEYASIBU E.  
JOURNAL OF ENGINEERING MATERIALS AND TECHNOLOGY-TRANSACTIONS OF THE ASME, vol.113, no.4, pp.456-464, 1991 (SCI-Expanded)
- XV. **ACOUSTIC-EMISSION AND FORCE SENSOR FUSION FOR MONITORING THE CUTTING PROCESS**  
EMEL E., KANNATEYASIBU E.  
INTERNATIONAL JOURNAL OF MECHANICAL SCIENCES, vol.31, pp.795-809, 1989 (SCI-Expanded)
- XVI. **TOOL FAILURE MONITORING IN TURNING BY PATTERN-RECOGNITION ANALYSIS OF AE SIGNALS**  
EMEL E., KANNATEYASIBU E.  
JOURNAL OF ENGINEERING FOR INDUSTRY-TRANSACTIONS OF THE ASME, no.2, pp.137-145, 1988 (SCI-Expanded)
- XVII. **LINEAR DISCRIMINANT FUNCTION-ANALYSIS OF ACOUSTIC-EMISSION SIGNALS FOR CUTTING-TOOL MONITORING**  
KANNATEYASIBU E., EMEL E.  
MECHANICAL SYSTEMS AND SIGNAL PROCESSING, vol.1, no.4, pp.333-347, 1987 (SCI-Expanded)

### Articles Published in Other Journals

- I. **Lean transformation to reduce costs in healthcare: A public hospital case in Turkey**  
YURTKURAN A., Özdemir D., YURTKURAN D. M., EMEL E.  
Journal of Hospital Administration, vol.6, no.4, pp.10, 2017 (Peer-Reviewed Journal)
- II. **Determination of Standard Times for Process Improvement: A Case Study**  
Akansel M., Yağmahan B., Emel E.  
Global Journal of Business, Economics and Management: Current Issues, vol.7, no.1, pp.62-68, 2017 (Peer-Reviewed Journal)

### Refereed Congress / Symposium Publications in Proceedings

- I. **Collision-free multi-robot collaboration in assembly line balancing**  
PARLAK İ. E., EMEL E.  
29nd EURO – European Conference on Operational Research, Valencia, Spain, 9 - 11 July 2018
- II. **Karışık modelli çift-tarafli U-tipi montaj hattı dengeleme ve iş gücü çizelgeleme problemi için iki aşamalı çözüm yaklaşımı**  
Kaya E., Güven A., Ünal T., YURTKURAN A., EMEL E.  
37. YÖNEYLEM ARAŞTIRMASI VE ENDÜSTRİ MÜHENDİSLİĞİ ULUSAL KONGRESİ, İstanbul, Turkey, 5 - 07 July 2017
- III. **Dağıtım - Toplamalı Araç Rotalama Probleminin İki Boyutlu Yükleme Kısıtı Altında Modellenmesi ve Çözümü**  
KAS F., EMEL E.

Yöneylem Araştırması ve Endüstri Mühendisliği 37. Ulusal Kongresi, İstanbul, Turkey, 5 - 07 July 2017

- IV. **Determination of Standard Times for Process Improvement A Case Study**  
AKANSEL M., YAĞMAHAN B., EMEL E.  
5th World Conference on Business, Economics and Management (BEM 2016), 12 - 14 May 2016
- V. **An Artificial Bee Colony Algorithm for Open Vehicle Routing Problems**  
YURTKURAN A., EMEL E.  
International Symposium on Engineering, Artificial Intelligence & Applications, Girne, Cyprus (Kktc), 4 - 06 November 2015
- VI. **A Binary Electromagnetism like Algorithm for Wind Turbine Placement Problem**  
YURTKURAN A., EMEL E.  
International Symposium on Engineering, Artificial Intelligence & Applications, Girne, Cyprus (Kktc), 4 - 06 November 2015
- VII. **Bir Otomotiv Ana Sanayi Firmasında Parti Büyüklüğü Belirleme ve İşgücü Çizelgeleme Çalışması**  
YILMAZ M., ÖZAY A., KARAKAŞ Ö., YAĞMAHAN B., EMEL E.  
YA/EM'2015-Yöneylem Araştırması/Endüstri Mühendisliği 35. Ulusal Kongresi, Ankara, Turkey, 9 - 11 September 2015
- VIII. **Dynamic flexible job shop scheduling under stochastic demand**  
EMEL E., Ümit Eraydın G.  
27th European Conference on Operational Research, Glasgow, United Kingdom, 12 - 15 July 2015
- IX. **A binary artificial bee colony algorithm for optimal wind turbine placement in wind farms**  
YURTKURAN A., EMEL E.  
28th Conference of the European Chapter on Combinatorial Optimization, Katanya, Italy, 28 - 30 May 2015
- X. **Koltuk üreten bir firmada fabrika içi lojistik yönetimi**  
GÜLER Z., GÜNHAN Ö., EMEL E., GÜNDÜZ T.  
Yöneylem Araştırması ve Endüstri Mühendisliği 31. Ulusal Kongresi, Sakarya, Turkey, 5 - 07 July 2011, pp.112
- XI. **Kasa Standardizasyonu ile Malzeme Taşıma Optimizasyonu**  
PARLAKTAŞ G., KAYNAK P., KARADEMİR Y., YAĞMAHAN B., EMEL E.  
YA/EM'2010-Yöneylem Araştırması/Endüstri Mühendisliği 30. Ulusal Kongresi, İstanbul, Turkey, 30 June - 02 July 2010
- XII. **An integrated simulation based nonlinear integer programming approach for minimization of surplus inventory in selective assembly**  
EMEL E., AKANSEL M., HACIOĞLU V.  
EURO Conference 2009, Bonn, Germany, 5 - 08 July 2009
- XIII. **A Fiber Optic Bending Sensor for the Vibration Monitoring of CNC Face Milling Machine**  
GÜCÜYENER İ., EMEL E.  
Mechatronic Systems and Materials 2008, Bialystok, Poland, 14 - 17 July 2008
- XIV. **Lojistik Faaliyetlerin Planlanmasında Ekolojik Faktör Değerlendirmesi**  
Evgi B., Öztürk E., Yılmaz H., Özer M., Yağmahan B., Emel E., Öztürk N.  
YA/EM'2008-Yöneylem Araştırması/Endüstri Mühendisliği 28. Ulusal Kongresi, İstanbul, Turkey, 30 June - 02 July 2008
- XV. **SIMULATION BASED DECISION-MAKING FOR HOSPITAL PHARMACY MANAGEMENT**  
YURTKURAN A., EMEL E.  
2008 Winter Simulation Conference, Florida, United States Of America, 7 - 10 December 2008, pp.1539-1546
- XVI. **Karışık Modelli Montaj Hattı Dengeleme Probleminde İstasyon Yüklerini Pürüzsüzleştirmek için Yasak Arama Yaklaşımı**  
YAĞMAHAN B., EMEL E.  
YA/EM'2007-Yöneylem Araştırması/Endüstri Mühendisliği 27. Ulusal Kongresi, İzmir, Turkey, 2 - 04 July 2007
- XVII. **Bulanık Sinir Ağı Tabanlı Programın Araç Modeline Uygulanması**  
GÜCÜYENER İ., EMEL E.  
SİU'xx05 IEEE 13. Sinyal İşleme ve İletişim Uygulamaları Kurultayı, Kayseri, Turkey, 16 - 18 May 2005
- XVIII. **Mechatronic Vocational Education**

KAYNAK Z. G., GÜCÜYENER İ., EMEL E.

Symposium on Challenges in the Internet and Interdisciplinary Research IPSI-2004, Pescara, Italy, 28 July - 02 August 2004

**XIX. Pres Hatlarında Çevrim Süreleri ve Parti Büyüklüklerinin Belirlenmesi ve İşgücü Dengeleme**

İNKAYA T., AKANSEL M., EMEL E.

III. Ulusal Üretim Araştırmaları Sempozyumu, İstanbul, Turkey, 19 - 20 April 2003, pp.546-551

**XX. An optimization approach for scheduling of jobs on lines of press machines**

Emel E., Tasci H.

6th Industrial Engineering Research Conference (IERC6), Florida, United States Of America, 17 - 18 May 1997, pp.192-197

**XXI. Tool Wear Detection by Neural Network Based Acoustic Emission Sensing**

EMEL E.

Symposium on Control of Manufacturing Processes, 1991 ASME Winter Annual Meeting, Georgia, United States Of America, 1 - 03 January 1991, vol.52, pp.79-86

**XXII. A sensor fusion approach to cutting tool monitoring**

Balakrishnan P., Trabelsi H., KannateyAsibu, Jr E., EMEL E.

15th NSF Conference on Production Research and Technology, San-Francisco, Costa Rica, 1 - 03 December 1989, pp.101-108

**XXIII. Characterization of Tool Wear and Breakage by Pattern Recognition Analysis of Acoustic Emission Signals**

EMEL E.

14th NAMRC - North American Manufacturing Research Conference, United States Of America, 1 - 05 July 1986, vol.1, pp.266-272

## Supported Projects

EMEL E., AY CEYLAN Ö., Project Supported by Higher Education Institutions, MONTAJ OPERASYONLARINDA OPERATÖR VERİMLİLİĞİNİN YAPAY ZEKA TEMELLİ GÖRÜNTÜ İZLEME İLE İYİLEŞTİRİLMESİNE YÖNELİK BİR ENDÜSTRİ 40 YAKLAŞIMI, 2022 - Continues

## Metrics

Publication: 47

Citation (WoS): 203

Citation (Scopus): 295

H-Index (WoS): 6

H-Index (Scopus): 9

## Non Academic Experience

ENQA - European Association for Quality Assurance

TTGV

EUA - Avrupa Üniversiteler Birliği

ULUTEK Yönetici A.Ş.

TUBİTAK-TEYDEB

U.Ü. Müh.Mim.Fak. Teknoloji Vakfı Bilimsel ve Teknik Araştırma Danışmanlık ve Eğitim İşletmesi

University of Michigan

University of Michigan