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Biography

Hale Gonca Köçken is an Associate Professor in the Department of Mathematical Engineering at the Yıldız Technical University (YTU), İstanbul, Turkey. She has been a faculty member of YTU since 2004. She completed her Ph.D. entitled "Fuzzy approaches to network analysis" in Applied Mathematics (2011) from the same department. Her current area of research is mathematical Programming, supply chain management and some related Operational Research subjects in multi criteria and fuzzy environments. Additionally, she has doing research about multi criteria decision making methods with type -2 fuzzy numbers and also fractional programming.

Education Information

Doctorate, Yıldız Technical University, Kimya Metalurji Fakültesi, Matematik Mühendisliği, Turkey 2005 - 2011

Postgraduate, Yıldız Technical University, Kimya Metalurji Fakültesi, Matematik Mühendisliği, Turkey 2003 - 2005

Undergraduate, Yıldız Technical University, Fen Edebiyat Fakültesi, Matematik, Turkey 1999 - 2003

Foreign Languages

English, B2 Upper Intermediate

Dissertations

Doctorate, Şebeke analizlerine bulanık yaklaşımlar , Yıldız Teknik Üniversitesi, Graduate School of Natural and Applied Sciences, Matematik Mühendisliği, 2011

Postgraduate, Çok amaçlı bulanık lineer taşıma problemi, Yıldız Teknik Üniversitesi, Graduate School of Natural and Applied Sciences, Matematik Mühendisliği , 2005

Research Areas

Social Sciences and Humanities, Econometrics, Operational Research, Management, Quantitative Methods, Industrial Engineering , Optimization Theory and Methods, Multiobjective Optimization, Linear Programming, Decision Theory, Multi Criteria Decision Making, Supply Chain and Logistics Management, Mathematics, Optimization, Natural Sciences, Engineering and Technology

Academic Titles / Tasks

Associate Professor, Yildiz Technical University, Faculty Of Chemical And Metallurgical Engineering, Department Of Mathematics Engineering, 2017 - Continues

Assistant Professor, Yildiz Technical University, Faculty Of Chemical And Metallurgical Engineering, Department Of Mathematics Engineering, 2012 - 2017

Research Assistant PhD, Yildiz Technical University, Faculty Of Chemical And Metallurgical Engineering, Department Of Mathematics Engineering, 2011 - 2012

Research Assistant, Yildiz Technical University, Faculty Of Chemical And Metallurgical Engineering, Department Of Mathematics Engineering, 2004 - 2011

Courses

Yöneylem Araştırması, Undergraduate, 2017 - 2018

Finans Matematiğine Giriş, Undergraduate, 2016 - 2017, 2015 - 2016, 2014 - 2015

Optimizasyon Teknikleri, Undergraduate, 2016 - 2017, 2015 - 2016, 2014 - 2015, 2013 - 2014

Lineer Programlama Teorisi, Undergraduate, 2017 - 2018

Yöneylem Araştırması, Undergraduate, 2017 - 2018, 2016 - 2017, 2015 - 2016

Lineer Programlama Teorisi, Undergraduate, 2017 - 2018

Lineer Programlama Teorisi, Undergraduate, 2017 - 2018, 2016 - 2017, 2015 - 2016

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Matrix norm methods for zero-sum fuzzy matrix games with payoffs of triangular fuzzy numbers**
İzgi B., KÖÇKEN H., Özkaya M.
Applied Mathematics and Computation, vol.479, 2024 (SCI-Expanded)
- II. **A Scenario-based Interval Multi-objective Mixed-integer Programming Model for a Water Supply Problem: An Integrated AHP Technique**
Ucler N., Gonce Kocken H.
Water Resources Management, vol.37, no.15, pp.5973-5988, 2023 (SCI-Expanded)
- III. **On Modeling of Surface Tension of CMC- α -Fe₂O₃ Nanoparticles by Fuzzy-Hybrid Approach: A Comparison Study**
Köçken H., Insel M. A., Temelcan G., Karakuş S., Albayrak F. İ.
CANADIAN JOURNAL OF CHEMICAL ENGINEERING, vol.101, no.11, pp.6446-6454, 2023 (SCI-Expanded)
- IV. **New unified score functions and similarity measures for non-standard fuzzy numbers: an extended TOPSIS method addressing risk attitudes**
Akdemir H. G., KÖÇKEN H.
Neural Computing and Applications, vol.35, no.19, pp.14029-14046, 2023 (SCI-Expanded)
- V. **Handling uncertainty in rheological properties of green eggshell nanocomposites by a fuzzy-hybrid modeling approach: a comparative study**
İnsel M. A., Karakuş S., Temelcan G., Köçken H., Albayrak F. İ.
Physica Scripta, vol.98, no.3, 2023 (SCI-Expanded)
- VI. **An exact iterative algorithm to solve a linear fractional programming problem**
Kocken H., Özkök B., Ahlatcioglu M.
SCIENTIA IRANICA INTERNATIONAL JOURNAL OF SCIENCE & TECHNOLOGY, vol.0, pp.1-27, 2022 (SCI-Expanded)

- VII. **Finding compromise solutions for fully fuzzy multi-objective linear programming problems by using game theory approach**
Temelcan G., Gonca Kocken H., Albayrak I.
Journal of Intelligent and Fuzzy Systems, vol.42, no.1, pp.283-293, 2022 (SCI-Expanded)
- VIII. **Fuzzy modelling of static system optimum traffic assignment problem having multi origin-destination pair**
Temelcan G., KÖÇKEN H., Albayrak I.
Socio-Economic Planning Sciences, vol.77, 2021 (SCI-Expanded)
- IX. **SYSTEM OPTIMUM FUZZY TRAFFIC ASSIGNMENT PROBLEM**
Temelcan G., Kocken H., Albayrak I.
PROMET-TRAFFIC & TRANSPORTATION, vol.31, no.6, pp.611-620, 2019 (SCI-Expanded)
- X. **A simple parametric method to generate all optimal solutions of fuzzy solid transportation problem**
Kocken H., Sivri M.
APPLIED MATHEMATICAL MODELLING, vol.40, pp.4612-4624, 2016 (SCI-Expanded)
- XI. **An approach for finding fuzzy optimal and approximate fuzzy optimal solution of fully fuzzy linear programming problems with mixed constraints**
Özkök B., Albayrak F. İ., Köçken H., Ahlatcıoğlu M.
JOURNAL OF INTELLIGENT & FUZZY SYSTEMS, vol.31, pp.623-632, 2016 (SCI-Expanded)
- XII. **Finding the fuzzy solutions of a general fully fuzzy linear equation system**
Kocken H., AHLATCIOĞLU M., ALBAYRAK F. İ.
JOURNAL OF INTELLIGENT & FUZZY SYSTEMS, vol.30, no.2, pp.921-933, 2016 (SCI-Expanded)
- XIII. **A mixed integer programming approach to a square fully fuzzy linear equation**
AHLATCIOĞLU M., Albayrak I., Kocken H. G., Ozkok B.
JOURNAL OF INTELLIGENT & FUZZY SYSTEMS, vol.31, no.3, pp.2009-2015, 2016 (SCI-Expanded)
- XIV. **Game theory and fuzzy programming approaches for bi-objective optimization of reservoir watershed management: a case study in Namazgah reservoir**
Ucler N., Engin G., Köçken H., Oncel M. S.
ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH, vol.22, no.9, pp.6546-6558, 2015 (SCI-Expanded)
- XV. **A Compensatory Approach to Multiobjective Linear Transportation Problem with Fuzzy Cost Coefficients**
Kocken H., AHLATCIOĞLU M.
MATHEMATICAL PROBLEMS IN ENGINEERING, 2011 (SCI-Expanded)

Articles Published in Other Journals

- I. **On credibilistic multi-objective linear programming problems with generalized intuitionistic fuzzy parameters**
Akdemir H. G., KÖÇKEN H., Kara N.
OPSEARCH, vol.61, no.1, pp.71-97, 2024 (ESCI)
- II. **Minimum cost flow problems in generalized fuzzy environments. Credibilistic CVaR minimization approach**
Akdemir H. G., Kara N., KÖÇKEN H.
Operations Research and Decisions, vol.34, no.3, pp.125-141, 2024 (ESCI)
- III. **A Fuzzy Programming Based Approach to a Multi-Objective Multi-Echelon Green Closed-Loop Supply Chain Problem**
Kocken K., ÖZKÖK B., KÖÇKEN H.
Cybernetics and Information Technologies, vol.23, no.3, pp.40-55, 2023 (ESCI)
- IV. **A new fuzzy linear regression algorithm based on the simulation of fuzzy samples and an application on popularity prediction of Covid-19 related videos**
Akdemir H. G., KÖÇKEN H.
JOURNAL OF STATISTICS AND MANAGEMENT SYSTEMS, vol.25, no.8, pp.2025-2041, 2022 (ESCI)
- V. **A novel iterative method to solve a linear fractional transportation problem**
Bas S., Kocken H., ÖZKÖK B.
PAKISTAN JOURNAL OF STATISTICS AND OPERATION RESEARCH, vol.18, no.1, pp.151-166, 2022 (ESCI)
- VI. **A Game Theory-based Approach to Fuzzy Linear Transportation Problem**
TEMELCAN G., KÖÇKEN H., ALBAYRAK F. İ.

Fuzzy Logic and Modeling in Engineering, vol.1, no.2, pp.28-33, 2022 (Peer-Reviewed Journal)

- VII. **A Fuzzy approach to multi-objective solid transportation problem with mixed constraints using hyperbolic membership function**
Kara N., Kocken H.
Cybernetics and Information Technologies, vol.21, no.4, pp.158-167, 2021 (ESCI)
- VIII. **Generating a set of compromise solutions of a multi objective linear programming problem through the game theory**
Köçken H., Albayrak F. İ., Sivri M., Akın S.
Operations Research and Decisions, vol.29, no.29, pp.77-88, 2019 (ESCI)
- IX. **Using some fuzzy aggregation operators for multi objective linear transportation problem**
Köçken H., Tiryaki F.
SIGMA JOURNAL OF ENGINEERING AND NATURAL SCIENCES-SIGMA MUHENDISLIK VE FEN BILIMLERI DERGISI, vol.32, no.4, pp.399-421, 2014 (ESCI)
- X. **Üniversite ders zaman çizelgeleme problemi için ikili tamsayılı bir model ve bir uygulama**
Köçken H., Özdemir R., Ahlatcıoğlu M.
İstanbul Üniversitesi, İşletme Fakültesi Dergisi, vol.43, no.1, pp.28-54, 2014 (Peer-Reviewed Journal)
- XI. **A Compensatory Fuzzy Approach to Multi Objective Linear Transportation Problem with Fuzzy Parameters**
Köçken H., Özkök B., Tiryaki F.
EUROPEAN JOURNAL OF PURE AND APPLIED MATHEMATICS, vol.7, no.3, pp.369-386, 2014 (ESCI)
- XII. **A Solution Proposal To Indefinite Quadratic Interval Transportation Problem**
Dalman H., Köçken H., Sivri M.
New Trends in Mathematical Sciences, vol.1, pp.7-12, 2013 (Peer-Reviewed Journal)
- XIII. **A Compensatory Approach to Multi objective Interval Transportation Problem**
KÖÇKEN H., AHLATCIOĞLU M.
SIGMA JOURNAL OF ENGINEERING AND NATURAL SCIENCES-SIGMA MUHENDISLIK VE FEN BILIMLERI DERGISI, vol.31, no.1, pp.20-33, 2013 (ESCI)

Books & Book Chapters

- I. **A Numerical Method for Integration of a Fuzzy Function over a Fuzzy Interval**
TEMELCAN G., KÖÇKEN H., ALBAYRAK F. İ.
in: Intelligent and Fuzzy Techniques for Emerging Conditions and Digital Transformation. INFUS 2021 Lecture Notes in Networks and Systems, Kahraman, C., Cebi, S., Cevik Onar, S., Oztaysi, B., Tolga, A.C., Sari, I.U., Editor, Springer, Cham., pp.281-288, 2022
- II. **SOLVING THE SYSTEM OPTIMUM STATIC TRAFFIC ASSIGNMENT PROBLEM WITH SINGLE ORIGIN DESTINATION PAIR IN FUZZY ENVIRONMENT**
ALBAYRAK F. İ., KÖÇKEN H., TEMELCAN G.
in: ADVANCES IN INTELLIGENT SYSTEM AND COMPUTING, Janusz Kacprzyk, Editor, SPRINGER, pp.521-530, 2021
- III. **Multi-Attribute Decision Making Using Interval Type-2 Fuzzy AHP and Its Application on Borsa Istanbul (BIST)**
Özkök B., Köçken H.
in: Interdisciplinary Perspectives on Operations Management and Service Evaluation, Panagiotis Manolitzas, Constantin Zopounidis, Michael Talias, Evangelos Grigoroudis, Nikolaos Matsatsinis, Editor, IGI Global, Pennsylvania, pp.30-56, 2021
- IV. **Multi-Attribute Decision Making Using Interval Type-2 Fuzzy AHP and Its Application on Borsa Istanbul (BIST)**
ÖZKÖK B., KÖÇKEN H.
in: Interdisciplinary Perspectives on Operations Management and Service Evaluation, P. Manolitzas, C. Zopounidis, M. Talias, E. Grigoroudis, & N. Matsatsinis, Editor, IGI Global, Hershey, PA, pp.30-56, 2021
- V. **A Type-2 Fuzzy TOPSIS-Based Methodology for the Analysis of Investment Decisions**
KÖÇKEN H., ÖZKÖK B.
in: Part of the Advances in Intelligent Systems and Computing book series (AISC, volume 1301), Allahviranloo T., Salahshour S., Arica N., Editor, Springer, Cham, Cham, pp.359-367, 2021
- VI. **A Short Review on Fuzzy System of Linear Equations Applications**

Köçken H., Albayrak F. İ.

in: Handbook of Research on Transdisciplinary Knowledge Generation, Victor X. Wang, Editor, IGI Global Disseminator of Knowledge, Pennsylvania, pp.75-87, 2019

VII. A Short Review on Fuzzy System of Linear Equations Applications

KÖÇKEN H., ALBAYRAK F. İ.

in: Handbook of Research on Transdisciplinary Knowledge Generation, Victor X. Wang, Editor, IGI Global Disseminator of Knowledge,, pp.75-87, 2019

VIII. A Short Review on Fuzzy System of Linear Equations

Köçken H., Albayrak F. İ.

in: Encyclopedia of Information Science and Technology, Third Edition , Mehdi Khosrow-Pour D.B.A., Editor, IGI Global, Pennsylvania, pp.6981-6989, 2015

IX. A Short Review of Multi Criteria Decision Making Approaches for Supplier Selection Problem

Köçken H., Özkök B.

in: Encyclopedia of Information Science and Technology, Third Edition , Mehdi Khosrow-Pour D.B.A., Editor, IGI Global, Pennsylvania, pp.4961-4969, 2015

Refereed Congress / Symposium Publications in Proceedings

I. A Numerical Method for Integration of a Fuzzy Function over a Fuzzy Interval

Temelcan G., Kocken H., Albayrak I.

International Conference on Intelligent and Fuzzy Systems, INFUS 2021, İstanbul, Turkey, 24 - 26 August 2021, vol.307, pp.281-288

II. Solving the System Optimum Static Traffic Assignment Problem with Single Origin Destination Pair in Fuzzy Environment

Temelcan G., Köçken H., Albayrak F. İ.

International Conference on Intelligent Decision Science, İstanbul, Turkey, 7 - 08 August 2021, pp.521-530

III. Solving Fuzzy Multi-objective Linear Programming Problems Using Multi-player Zero-Sum Game

Temelcan G., Albayrak I., Köçken H., Sivri M.

International Conference on Intelligent and Fuzzy Systems, INFUS 2020, İstanbul, Turkey, 21 - 23 July 2020, vol.1197 AISC, pp.1483-1490

IV. Solving the System Optimum Static Traffic Assignment Problem with Single Origin Destination Pair in Fuzzy Environment

Temelcan G., Köçken H., Albayrak F. İ.

The 4-th International Conference on Intelligent Decision Science (IDS), İstanbul, Turkey, 7 - 08 August 2020, pp.111-112

V. Fuzzy Modelling on Control of Heat Exchangers

İnsel M. A., Albayrak F. İ., Köçken H.

International Conference on Mathematics and its Applications in Science and Engineering (ICMASE2020), Ankara, Turkey, 9 - 10 July 2020, pp.177-184

VI. Comparison of Nontraditional Optimization Techniques in Optimization of Shell and Tube Heat Exchanger

İnsel M. A., Albayrak F. İ., Köçken H.

International Conference on Mathematics and its Applications in Science and Engineering (ICMASE2020), Ankara, Turkey, 9 - 10 July 2020, pp.185-196

VII. AN INVESTMENT DECISION MAKING METHODOLOGY BASED ON TYPE-2 FUZZY AHP: A CASE STUDY ON BORSA ISTANBUL (BIST)

Özkök B., Köçken H.

International Conference on Applied Research in Management, Business and Economics, Barcelona, Spain, 5 - 07 April 2019, pp.50-61

VIII. A Mixed Integer Modelling of a Shift Scheduling Problem in a Call Center

Vural A., Köçken H.

International Conference on Applied Analysis and Mathematical Modeling, İstanbul, Turkey, 10 - 13 March 2019, pp.147

IX. On the Solution of a Fully Fuzzy Transportation Problem

Köçken H.

International Conference on Applied Analysis and Mathematical Modeling, ICAAMM 2019, İstanbul, Turkey, 10 - 13 March

2019, pp.150

- X. **A new method for generating some extreme points of a convex polyhedron for solving multi-objective linear programming problems using game theory approach**
Sivri M., Köçken H., Albayrak F. İ., Temelcan G., Esen H.
International Conference on Mathematical Studies and Applications, Konya, Turkey, 4 - 07 October 2018, pp.112
- XI. **A game theory based approach to generate a set of compromise solutions of a multiobjective linear programming problem**
SİVRİ M., KÖÇKEN H., ALBAYRAK F. İ., AKIN S.
INTERNATIONAL CONFERENCE ON APPLIED ANALYSIS AND MATHEMATICAL MODELING, 2018, İstanbul, Turkey, 20 June 2018, pp.13
- XII. **User-Optimum Fuzzy Traffic Assignment Problem**
Temelcan G., Albayrak F. İ., Köçken H.
13th Balkan Conference on Operational Research (BALCOR'18), Belgrade, Serbia And Montenegro, 25 - 28 May 2018, pp.57
- XIII. **Fuzzy Analysis of a traffic assignment problem**
TEMELCAN G., KÖÇKEN H., ALBAYRAK F. İ.
37. YÖNEYLEM ARAŞTIRMASI VE ENDÜSTRİ MÜHENDİSLİĞİ ULUSAL KONGRESİ, Turkey, 5 - 07 July 2017
- XIV. **FUZZY EQUILIBRIUM ANALYSIS OF A TRANSPORTATION NETWORK PROBLEM**
TEMELCAN G., KÖÇKEN H., ALBAYRAK F. İ.
IFSCOM, Mersin, Turkey, 29 August - 01 September 2016
- XV. **On the Solution of a nxn Fully Fuzzy Linear Equation System with Triangular Fuzzy Numbers**
Ahlaticioğlu M., Albayrak F. İ., Köçken H., Özkök B.
ICWOMA (International Conference and Workshop On Mathematical Analysis), Kuala-Lumpur, Malaysia, 27 - 30 May 2014, pp.36
- XVI. **The fractional transportation problem with interval demand, supply and costs**
Köçken H., Emiroğlu İ., Güler C., Taşçi F., Sivri M.
International Conference on Mathematical Sciences and Istatistic 2013 (ICMSS 2013), Kuala-Lumpur, Malaysia, 5 - 07 February 2013, vol.1557, pp.339-344
- XVII. **Fuzzy approaches to supplier selection problem**
Özkök B., Köçken H.
International Conference on Mathematical Sciences and Istatistic 2013, (ICMSS 2013), Kuala-Lumpur, Malaysia, 5 - 07 February 2013, vol.1557, pp.355-360
- XVIII. **The Fractional Transportation Problem with Interval Demand, Supply and Costs**
Kocken H., Emiroğlu İ., Gueler C., Taşçi F., Sivri M.
International Conference on Mathematical Sciences and Statistics (ICMSS), Kuala-Lumpur, Malaysia, 5 - 07 February 2013, vol.1557, pp.339-344
- XIX. **A Fuzzy Approach to Closed Loop Supply Chain using Mixed-Integer Linear Programming**
Özkök B., Köçken H., Budak E.
International Conference on Applied Analysis and Algebra ICAAA 2012, İstanbul, Turkey, 20 June 2012, pp.76
- XX. **Using some fuzzy aggregation operators for Multi-Objective Linear Transportation Problem**
Köçken H., Tiryaki F.
International Conference on Applied Analysis and Algebra (ICAAA 2011), İstanbul, Turkey, 29 June - 02 July 2011, pp.250
- XXI. **A Compensatory Approach to Fuzzy Shortest Path Problem**
Köçken H., Ahlatcioğlu M., Tiryaki F.
1st International Fuzzy Systems Symposium, Ankara, Turkey, 1 - 02 October 2009, pp.1-12
- XXII. **Bulanık En Kısa Yol Problemi ve Bir Uygulama**
KÖÇKEN H., TİRYAKİ F.
Yöneylem Araştırması ve Endüstri Mühendisliği 2008 (YA/EM'2008) 28. Ulusal Kongresi, Turkey, 1 - 04 July 2008
- XXIII. **A Compensatory Fuzzy Approach to Multiobjective Solid Transportation Problem**
Tiryaki F., Köçken H.
Mathematical Methods in Engineering International Symposium (MME-06), Ankara, Turkey, 27 - 29 April 2006, pp.1-10
- XXIV. **A Compensatory Fuzzy Approach to Multiple Objective Linear Transportation Problem**
Tiryaki F., Köçken H.
Innovations in Intelligent Systems and Applications, INISTA'2005, İstanbul, Turkey, 15 - 18 October 2005, pp.79-82

Supported Projects

Özkök B., Fidan Keçeci N., Köçken H., Project Supported by Higher Education Institutions, ARALIK TİP-2 BULANIK LİNEER PROGRAMLAMA PROBLEMİNE BİR ÇÖZÜM ÖNERİSİ, 2020 - 2022

ÖZKÖK B., AHLATCIOĞLU M., KÖÇKEN H., Project Supported by Higher Education Institutions, Tip-2 Bulanık Kümeler ile Çok Nitelikli Karar Verme Teknikleri, 2017 - 2021

ÖZKÖK B., AHLATCIOĞLU M., KÖÇKEN H., Project Supported by Higher Education Institutions, Tam Bulanık Lineer Programlama Problemine Bir Çözüm Önerisi, 2014 - 2017

KÖÇKEN H., Project Supported by Higher Education Institutions, Tam Bulanık Mxn lik Lineer Denklem Sistemlerinin Çözümü İçin Bir Karma Tamsayılı Programlama Yaklaşımı, 2013 - 2016

Scientific Research / Working Group Memberships

Multidisciplinary Nanoscience Technology, Yildiz Technical University, Türkiye, <https://avesis.istanbulc.edu.tr/arastirma-grubu/mnst> Yildiz Technical University, Türkiye, 2021 - Continues

Metrics

Publication: 62

Citation (WoS): 47

Citation (Scopus): 97

H-Index (WoS): 4

H-Index (Scopus): 5

Congress and Symposium Activities

1st International Fuzzy Systems Symposium, Working Group, Ankara, Turkey, 2009

Mathematical Methods in Engineering International Symposium, Working Group, Ankara, Turkey, 2006

Innovations in Intelligent Systems and Applications, INISTA'2005, , Working Group, İstanbul, Turkey, 2005

Non Academic Experience

Bahçeşehir Üniversitesi