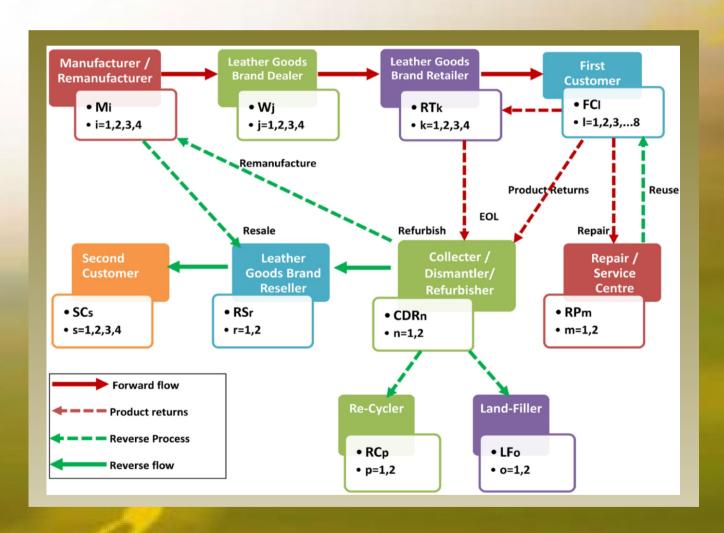




# American Journal of Operations Research





# **Journal Editorial Board**

ISSN 2160-8830 (Print) ISSN 2160-8849 (Online)

http://www.scirp.org/journal/ajor

# **Editor-in-Chief**

Prof. Jinfeng Yue

Middle Tennessee State University, USA

# **Editorial Advisory Board**

Prof. Bintong Chen Prof. Wade D. Cook Prof. Shu-Cherng Fang Prof. Panos Kouvelis Prof. Lawrence M. Seiford Prof. Suresh P. Sethi University of Delaware, USA York University, Canada

North Carolina State University, USA Washington University in St. Louis, USA University of Michigan, USA University of Texas at Dallas, USA

### **Editorial Board**

Dr. Javier De Andrés Prof. Janine E. Aronson Dr. Annamaria Barbagallo

Dr. Nabil Belacel Prof. Ignacio Castillo Prof. Xu Chen

Prof. Muhammad El-Taha

Pr. Carmen Galé
Prof. Xianghua Gan
Prof. Xiuli He
Prof. Mhand Hifi
Prof. Zhimin Huang
Prof. Zhibin Jiang

Dr. Ricardo Josa-Fombellida Prof. Nguyen Khac Minh Prof. Dennis Leech Prof. Dengfeng Li Prof. Liang Liang Dr. Pedro Lorca

Prof. Charles L. Munson Dr. Jamal Ouenniche

Prof. Joaquín Antonio Pacheco Bonrostro

Prof. Javier Ramirez Rodriguez

Prof. Bhaba R. Sarker

Prof. Renduchintala Raghavendra Kumar Sharma

Prof. Andranik Tangian
Prof. Andranik Tangian
Prof. Etsuji Tomita
Prof. Delfim F. M. Torres
Prof. Evangelos Triantaphyllou

Prof. Yi-Min Xie Dr. Shenghan Xu Dr. Jiping Yang Dr. Shilei Yang Prof. Peng-Yeng Yin Dr. Xiaohang Yue

Dr. Manish Verma

Dr. Yu Amy Xia

University of Oviedo, Spain University of Georgia, USA

University of Naples "Federico II", Italy

NRC Institute for Information Technology, Canada

Wilfrid Laurier University, Canada

University of Electronic Science and Technology of China, China

University of Southern Maine, USA University of Zaragoza, Spain

The Hong Kong Polytechnic University, China The University of North Carolina at Charlotte, USA University of Picardie Jules Verne, France

Adelphi University, USA

Shanghai Jiao Tong University, China University of Valladolid, Spain Thang Long University, Vietnam University of Warwick, UK Fuzhou University, China

University of Science and Technology of China, China

University of Oviedo, Spain Washington State University, USA University of Edinburgh, UK University of Burgos, Spain

The Metropolitan Autonomous University, Mexico

Louisiana State University, USA

IIT Kanpur, India

Wilfrid Laurier University, Canada Karlsruhe Institute of Technology, Germany The University of Electro-Communications, Japan University of Aveiro, Portugal

University of Aveiro, Portugal Louisiana State University, USA McMaster University, Canada Northeastern University, USA RMIT University, Australia University of Idaho, USA Beihang University, China

Southwestern University of Finance and Economics, China

National Chi Nan University, Chinese Taipei University of Wisconsin-Milwaukee, USA



# **Table of Contents**

Volume 6	Number 4	July 2016
	x Sigma Tools and Methodology to Improve Student Englis at Elementary School	h Language
M. Arafeh		261
•	itenance Modeling for Systems with Multiple Non-Identica ed DSSP Method	al Units
X. H. Zhang,	J. C. Zeng	275
Solving the U	nbalanced Assignment Problem: Simpler Is Better	
N. Betts, F. J.	. Vasko	296
•	on of Hybrid Genetic Algorithm for CLSC Network Design Case Study on Fashion Leather Goods Industry	
M. Aravenda	n, R. Panneerselvam	300
	of Priorities in Multi-Criteria Decision Analysis (MCDA): Contest in the Cognitive Space	nnecting
S. Zahir		317
	odel of a Cold-Stand by System with Waiting for atment of Server	
R. K. Bhardw	aj, R. Singh	334
Neural-Based	Routing Method for Alleviating Congestion in Complex No.	etworks
T. Kimura, T.	Takamizawa, T. Matsuura	343
_	orithm for Overall Designing and Planning of a Long Term vanced Network	
B. A. P. Bertr	rand, D. Moustapha, S. Etienne, O. Souleymane, A. B. Matthieu	355

# American Journal of Operations Research (AJOR)

#### **Journal Information**

#### SUBSCRIPTIONS

The American Journal of Operations Research (Online at Scientific Research Publishing, <a href="www.SciRP.org">www.SciRP.org</a>) is published bimonthly by Scientific Research Publishing, Inc., USA.

#### **Subscription rates:**

Print: \$79 per issue.

To subscribe, please contact Journals Subscriptions Department, E-mail: <a href="mailto:sub@scirp.org">sub@scirp.org</a>

#### **SERVICES**

#### Advertisements

Advertisement Sales Department, E-mail: <a href="mailto:service@scirp.org">service@scirp.org</a>

### Reprints (minimum quantity 100 copies)

Reprints Co-ordinator, Scientific Research Publishing, Inc., USA.

E-mail: sub@scirp.org

#### **COPYRIGHT**

#### COPYRIGHT AND REUSE RIGHTS FOR THE FRONT MATTER OF THE JOURNAL:

Copyright © 2016 by Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY). http://creativecommons.org/licenses/by/4.0/

#### COPYRIGHT FOR INDIVIDUAL PAPERS OF THE JOURNAL:

Copyright  $\ensuremath{\mathbb{Q}}$  2016 by author(s) and Scientific Research Publishing Inc.

#### REUSE RIGHTS FOR INDIVIDUAL PAPERS:

Note: At SCIRP authors can choose between CC BY and CC BY-NC. Please consult each paper for its reuse rights.

#### DISCLAIMER OF LIABILITY

Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any materials, instructions, methods or ideas contained herein. We expressly disclaim any implied warranties of merchantability or fitness for a particular purpose. If expert assistance is required, the services of a competent professional person should be sought.

## PRODUCTION INFORMATION

For manuscripts that have been accepted for publication, please contact:

E-mail: ajor@scirp.org



# **American Journal of Operations Research**

ISSN 2160-8830 (Print) ISSN 2160-8849 (Online) http://www.scirp.org/journal/ajor

AJOR is an international scientific journal dedicated to the publication and public discussion of high quality, original papers that contribute to the methodology of operational research and to the practice of decision making.

## **Editor-in-Chief**

Prof. Jinfeng Yue

Middle Tennessee State University, USA

#### **Editorial Board**

Dr. Javier De Andrés Prof. Janine E. Aronson Dr. Annamaria Barbagallo Dr. Nabil Belacel Prof. Ignacio Castillo Prof. Xu Chen Prof. Muhammad El-Taha Dr. Carmen Galé Prof. Xianghua Gan Prof. Xiuli He Prof. Mhand Hifi Prof. Zhimin Huang

Prof. Zhibin Jiang

Dr. Ricardo Josa-Fombellida
Prof. Nguyen Khac Minh
Prof. Dennis Leech
Prof. Dengfeng Li
Prof. Liang Liang
Dr. Pedro Lorca
Prof. Charles L. Munson
Dr. Jamal Ouenniche
Prof. Joaquín Antonio Pacheco Bonrostro
Prof. Javier Ramirez Rodriguez
Prof. Bhaba R. Sarker
Prof. Renduchintala Raghavendra Kumar Sharma

Dr. Chunming (Victor) Shi

Prof. Etsuji Tomita
Prof. Delfim F. M. Torres
Prof. Evangelos Triantaphyllou
Dr. Manish Verma
Dr. Yu Amy Xia
Prof. Yi-Min Xie
Dr. Shenghan Xu
Dr. Jiping Yang
Dr. Shilei Yang
Prof. Peng-Yeng Yin
Dr. Xiaohang Yue

Prof. Andranik Tangian

## **Subject Coverage**

This journal invites original research and review papers that address the following issues in operations research. Topics of interest include, but are not limited to:

# 1. Operations Research and Optimization Theory and Research Technical Approaches

Computational Intelligence and Information Management

Continuous Optimization

Decision Support Systems, Multi-Criteria Decision Methods

Discrete Optimization

Expert Systems

Heuristics Mathematical Programming

Networks

Queues

Simulation

Stochastic Models and Statistics

Time Series Analysis

#### 2. Manufacturing and Service Operations Research

Forecasting

Inventory

Location

Logistics, Transportation Warehousing and Maintenance

Planning and Scheduling

Product and Service Design

Project Management
Quality Management
Revenue Management
Supply Chain Management

#### 3. Interfaces with Other Disciplines

Community Operations Research

Complex Systems

**Education Operations Research** 

Environmental and Energy Issues

Financial Engineering

Government Operations Research

Health Services Operations Research

Marketing Science

Military and Homeland Security

Operations Research in Nonprofit Organization

Policy Modeling and Public Sector OR

Productivity and Efficiency in the Public Sector

Sports Operations Research

E-mail: ajor@scirp.org

Telecommunications and Networking

We are also interested in short papers (letters) that clearly address a specific problem, and short survey or position papers that sketch the results or problems on a specific topic. Authors of selected short papers would be invited to write a regular paper on the same topic for future issues of the AJOR.

# **Notes for Intending Authors**

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. Paper submission will be handled electronically through the website. All papers are refereed through a peer review process. For more details about the submissions, please access the website.

#### Website and E-mail