Preface

*Handbook of Research on Military, Aeronautical, and Maritime Logistics and Operations* is an novel, innovative and adequate source of information that compiles interdisciplinary perspectives about diverse issues related with Logistics on different ways about Intelligent Optimization, Industrial Applications on real world, Social applications and Technology applications each one with a different perspective about the correct solution of this kind of methodologies. This book is a collective effort to introduce new ideas and paradigms from a variety of perspectives using innovative techniques related with Bioinspired Algorithms and methodologies associated with Artificial Intelligence. An innovative Handbook specialized on optimization considers different aspects to realize this “Intelligent Optimization” tries to improve with innovative techniques and methodologies different daily aspects of our lives, in each one of them is possible understand the necessity of improve distances, time, costs, spaces and a plethora of features associated with the modern life (labor associated with delivery of goods, materials or products). We received manuscripts from renowned researchers from all around the world associated with Theoretical foundations of Logistics to understand many paradigms on different Optimization implementation kind. In addition we receive many manuscripts with expertise on improving optimization related with Logistics of products and services, Optimization of different elements in the time and location, Social Applications to enjoy our life of a better way, and finally, Technologies Applications of diverse ways to increase our Life Quality. The book starts with a section entitled Theoretical foundations of Logistics, featuring six chapters on the theoretical ideas related with the correct implementation of diverse range of Logistics applications on real world. The first chapter of this section is “The premises of logistics: The organization of warships in France in the 17th and 18th Centuries,” which aboard the theoretical fundamentals of an adequate decision support systems under uncertainty, The Chapter: “Optimization of the Vertex Separation Problem with Genetic Algorithms” is presented a mathematical resolution to a business company. The Chapter: “Supply Chains under Security Threat: The First National Exploratory Study in México” determines actions to improvement an innovative model of supply chain. The Chapter entitled: “Intentional Food Contamination in the Food Supply Chain: Proposal of a Management System for its Prevention” explains different models to prevent accidents with contaminated food associated with their transportation. The Chapter: “Clio-combinatorics: A novel framework to analyze military logistics choices using operations research techniques” detailed different strategies to models uncertainty scenarios. Finally the last chapter of this section is entitled: “Optimization of Utility Functions in an Admissible Space of Higher Dimension: Optimization of Utility Functions in an Admissible Space of Higher Dimension” explains different models to organize transportation with extra dimensions to reduce spaces.
The next section is named Implementations of Logistics, featuring six chapters related with different comparatives of Logistics in the search to improve resources in diverse aspects of our transportations or improve process to this. The Chapter entitled: “Analyzing airport capacity by simulation: A Mexican case study” explains a model related with their routes of delay using Mathematical models and specialized software. The Chapter: “VisTHAA: A Statistical Tool for Comparison of Heuristics”, proposes an innovative Visualization Tool to analyze heuristics related with Intelligent Logistics, The Chapter entitled: “Modelling the route choice: The role of volume-delay functions in transport planning” describe different models associated with the reactive Logistics under uncertainty situations. The Chapter: “The influence and management of the supply chain performance of manufacturing SMEs in Aguascalientes” explains a real problem about the logistics to organize times in a novel SME. The Chapter: “Comparison of two random weight generators for Multi-objective Optimization: Comparison of two random weight generators for Multi-objective Optimization” details novel specification to reduce times to distribution in a Mathematical Model. The Chapter entitled: “A Hybrid metaheuristic algorithm for the quay crane scheduling problem” explains a model hybrid to solve problems with time and space. Finally the last chapter in this section is: “Temperature Modeling of a Greenhouse Environment” which analyzes a model to control the different exogenous aspects in a Greenhouse to grow food in semi-desert areas.

The third section is named Applications of Innovative Logistics, featuring six chapters related with different comparatives of Logistics Models in the search to improve resources in diverse aspects of companies and to improve our lives. The first chapter of this section is: “Multi-Objective Simulated Annealing Algorithms for General Problems” which explains different models to solve general problems in Logistics. The Chapter entitled: “Emergency Department Logistic Optimization using Design of Experiments: From Triage to High Quality of Service” detailed a novel model of design of experiments to reduce costs in Logistics of service. The Chapter: “Implementing a Container Ship Stowage Problem for humanitarian aid in Palestine based on cultural algorithms” explains a real problem with the support to an isolated society and the best options to organize this service on the time take as important factor the locations and ubiquties in the Container Ship and problems of each point to send the correct goods. The Chapter: “A Hybrid Intelligent Risk Identification Model for Configuration Management in Aerospace Systems” describes a model to improve times and costs associated with management in an Aerospatiale project. The Chapter: “Hybrid Multi-annealing simulated annealing applied to vehicle routing problem a case of study” explains a specific topic related with problems on the exogenous costs in a Vehicle routing problem in a Logistics System. The Chapter: “Maritime Logistics” detailed a model to improve Logistics in ships. Finally in this section is presented “A Mobile Application for Helping Urban Public Transport and Its Logistics,” this chapter proposes new ideas related with the delivery of products and detailed a novel technique to analyze the restriction of Time Windows.

In the section entitled Optimization in Logistics grouped six different papers related with solutions derived of specific aspects try to improve daily activities on Optimization with real applications to social topics. In the chapter “A review of the main options of tools for optimizing operations (in companies, manufacturing and supply chains)” explains the way to obtain best models to routes in different kind of companies. “The application of Hanoi towers game in logistics management” describes the way to collect thematic objects and improve these collections using a parallel hybrid algorithm. The chapter entitled “Determining the relationship between time of construction and cranes organization by applying the bees’ algorithm for reducing the time of construction” explains different strategies to model and improve the reduction of time when a building is constructed. In “Use of GVRP as a model of two specific real world problems and its bioinspired solution” are explained different models to improve the
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solution in a real word problem to transportation perishing food in a largest city. Meanwhile in: “Strategic Designing and Optimization of Mixed Flow Impeller Blades for Maritime Applications” is presented a Model to reduce the costs in Maritime Transportation. In the Chapter: “An estimation of distribution algorithm-based approach for the order batching problem. An experimental study” is showed a model based on Bioinspired Algorithms to improve a specific stochastic model demand. Finally the chapter “Determining maximum load of passengers and goods to an aero taxi in southwestern Chihuahua” is a novel technique used on Aeronautical Models to improve the feature of a system based on aerial transportation to adequate the necessities of Transportation sector on Mexico.

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A book that aims to improve our lives would not be complete without giving itself to a well-intentioned cause. Therefore, from the very beginning of the project, we decided to humbly donate all of our revenue generated by this book to World Wild Foundation. The content of the chapters included in this book is the sole responsibility of the authors. The views, opinions or positions expressed by the chapter authors are solely those of the authors, and do not necessarily reflect the views, opinions or positions of the editors. All trademarks, trade names, service marks, and logos referenced in the chapters of this book belong to their respective companies.

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