Foreword

Business competitiveness and Logistics is a complex phenomenon that has become critical for companies to reach their development locally and internationally. On the one hand, macro factors and market structure influence in business competitiveness, but also in a regional or sector context. The internal aspects and the use of various business and Logistics tools contribute to the ability to create value in an organization.

This edited collection of papers entitled *Handbook of Research on Military, Aeronautical, and Maritime Logistics and Operations* presents a set of applications which purpose is to solve a wide variety of modern and real world problems on logistics management and optimization by means of Hybrid Artificial Intelligence Systems. This book consists of twenty seven chapters, grouped in four main areas: Theoretical foundations of Logistics, Implementations of Logistics, Applications of Innovative Logistics, and Optimization in Logistics, where are discussed several applications using Hybrid Artificial Intelligence Systems that result of integrating different Artificial Intelligence Techniques on different Logistics fields. Chapters describe important relatively new or emerging areas of work in which the authors are personally involved; most of them hot topics of discussion in Scientific and Academic Community.

THEORETICAL FOUNDATIONS OF LOGISTICS

IMPLEMENTATIONS OF LOGISTICS

The second section, the most industrial on the book, consists of six chapters: Chapter 7, “Analyzing Airport Capacity by Simulation: A Mexican Case Study” explains a model related with their routes of delay using Mathematical models and specialized software. Chapter 8, “VisTHAA: A Statistical Tool for Comparison of Heuristics”, proposes an innovative Visualization Tool to analyze heuristics related with Intelligent Logistics, Chapter 9, “Modelling the Route Choice: The Role of Volume-Delay Functions in Transport Planning” describe different models associated with the reactive Logistics under uncertainty situations. Chapter 10, “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. Chapter 11, “Comparison of Two Random Weight Generators for Multi-Objective Optimization” details novel specification to reduce times to distribution in a Mathematical Model. Chapter 12, “A Hybrid Metaheuristic Algorithm for the Quay Crane Scheduling Problem” explains a model hybrid to solve problems with time and space. Chapter 13, “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.

APPLICATIONS OF INNOVATIVE LOGISTICS


OPTIMIZATION IN LOGISTICS

This section consists of seven chapters: Chapter 21, “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. Chapter 22, “The Application of Hanoi Towers Game in Logistics Management” describes the way to collect thematic objects and improve these col-
Foreword

lections using a parallel hybrid algorithm. Chapter 23, “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. Chapter 24, “Use of GVRP as a Model of Two Specific Real World Problems and Its Bioinspired Solution” are explained different models to improve the solution in a real word problem to transportation perish food in a largest city. Chapter 25, “Strategic Designing and Optimization of Mixed Flow Impeller Blades for Maritime Applications” is presented a Model to reduce the costs in Maritime Transportation. Chapter 26, “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, and Chapter 27, “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.

All these chapters provide an interesting prospective on where this important field is going at the beginning of the second decade of the twenty-first century.

Oscar Castillo
Mexican Technological Institute, Mexico

Ocotlán Díaz-Parra
Hidalgo University, Mexico

Jorge Ruiz-Vanoye
Hidalgo University, Mexico

Oscar Castillo holds the Doctor in Science degree (Doctor Habilitatus) in Computer Science from the Polish Academy of Sciences (with the Dissertation “Soft Computing and Fractal Theory for Intelligent Manufacturing”). He is a Professor of Computer Science in the Graduate Division, Tijuana Institute of Technology, Tijuana, Mexico. In addition, he is serving as Research Director of Computer Science and head of the research group on Hybrid Fuzzy Intelligent Systems. Currently, he is Vice-President of HAFSA (Hispanic American Fuzzy Systems Association) and President of IFS (International Fuzzy Systems Association). Prof. Castillo is also Chair of the Mexican Chapter of the Computational Intelligence Society (IEEE). He also belongs to the Technical Committee on Fuzzy Systems of IEEE and to the Task Force on “Extensions to Type-1 Fuzzy Systems”. He is also a member of NAFIPS, IFSA and IEEE. He belongs to the Mexican Research System (SNL Level 3). His research interests are in Type-2 Fuzzy Logic, Fuzzy Control, Neuro-Fuzzy and Genetic-Fuzzy hybrid approaches. He has published over 100 journal papers, 7 authored books, 16 edited books, and 500 papers in conference proceedings. He has been Guest Editor of several successful Special Issues in the past, like in the following journals: Applied Soft Computing, Intelligent Systems, Information Sciences, Non-Linear Studies, Fuzzy Sets and Systems, JAMRIS and Engineering Letters. He is currently Associate Editor of the Information Sciences Journal and the IEEE Transactions on Fuzzy Systems.

**Foreword**

**Jorge Ruiz-Vanoye**, Ph.D. on Computational Sciences, 2004-2008 from Cenidet. He is Editor to IJCOPI and expert in Lineal Programming, Algorithmic, Evolving algorithm, Software engineering, Computational Intelligence, Computer Science Security, Computational Educational and Parallel & Distributed Computing. He belongs to the Mexican Research System (SNI Level 1).