# Table of Contents

Foreword ................................................................................................................................. xii

Preface ........................................................................................................................................ xiv

Acknowledgment ...................................................................................................................... xvi

## Section 1
### Overview of Healthcare System Issues

**Chapter 1**
Current Practices in Select Healthcare Systems ................................................................. 1
   *Venkat Sadanand, University of Saskatchewan, Canada*

**Chapter 2**
Economic Efficiency and the Canadian Health Care System ............................................. 13
   *Asha B. Sadanand, University of Guelph, Canada*

**Chapter 3**
A Review of Recent Contribution in Agent Based Health Care Modeling ....................... 26
   *Simerjit Gill, University of Regina, Canada & TRLabs Regina, Canada*
   *Raman Paranjape, University of Regina, Canada & TRLabs Regina, Canada*

## Section 2
### Healthcare Modeling Systems

**Chapter 4**
Agency in Health Care System Modeling and Analysis ...................................................... 45
   *Raman Paranjape, University of Regina, Canada & TRLabs Regina, Canada*
   *Simerjit Gill, University of Regina, Canada & TRLabs Regina, Canada*
Chapter 5
Operating Room Simulation and Agent-Based Optimization............................................................ 69
  Q. Peng, University of Manitoba, Canada
  Q. Niu, University of Manitoba, Canada
  Y. Xie, University of Manitoba, Canada
  T. ElMekkawy, University of Manitoba, Canada

Chapter 6
Building a Health Care Multi-Agent Simulation System with Role-Based Modeling.................... 90
  Xiaoqin Zhang, University of Massachusetts Dartmouth, USA
  Haiping Xu, University of Massachusetts Dartmouth, USA
  Bhavesh Shrestha, University of Massachusetts Dartmouth, USA

Section 3
Physician/Patient Support Systems

Chapter 7
HeCaSe2: A Multi-Agent System that Automates the Application of Clinical Guidelines .......... 113
  David Isern, University Rovira i Virgili, Italy
  Antonio Moreno, University Rovira i Virgili, Italy

Chapter 8
An Agent-Based Modeling System for Wellness................................................................. 137
  Luigi Benedicenti, University of Regina, Canada
  Chitsutha Soomlek, University of Regina, Canada

Chapter 9
Using Probabilistic Neural Network to Select a Medical Specialist Agent............................... 164
  Vijay Kumar Mago, DAV College, India
  M. Syamala Devi, Panjab University, India
  Ajay Bhatia, CTIM&IT, India
  Ravinder Mehta, Mehta Childcare Center, India

Chapter 10
A Multi-Agent Simulation of Kidney Function for Medical Education.................................... 178
  Kin Lik Wang, University of Hawaii, USA
  Nancy E. Reed, University of Hawaii, USA
  Dale S. Vincent, University of Hawaii, USA
Section 4
Population Modeling Systems

Chapter 11
Role of Multi-Agents System in Creation of Collaborative Environments within Mental Health Domain

Maja Hadzic, Curtin University of Technology, Australia
Darshan S. Dillon, Curtin University of Technology, Australia

Chapter 12
Multi-Agent Systems in Developing Countries

Dean Yergens, University of Manitoba, Canada, and University of Calgary, Canada
Julie Hiner, University of Calgary, Canada
Jörg Denzinger, University of Calgary, Canada

Chapter 13
Projecting Health Care Factors into Future Outcomes with Agent-Based Modeling

Georgiy Bobashev, RTI International, Russia
Andrei Borschchev, XJ Technologies, Russia

Compilation of References

About the Contributors

Index