

An Excellent Addition to Your Library!

Released: October 2013

Robotics: Concepts, Methodologies, Tools, and Applications



Information Resources Management Association (USA)

As mechanical and cybernetic technologies gain prominence and usability, robots have become ever more present in our everyday lives, with applications in education, transportation, and the workforce.

Robotics: Concepts, Methodologies, Tools, and Applications explores some of the most recent developments in robotic motion, artificial intelligence, and human-machine interaction. The chapters in this extensive multi-volume reference source provide insight into a wide variety of applications and functional areas: from robots used in educational and medical settings to autonomous military and exploratory machines. Scientists, engineers, specialists, and programmers will all find valuable information and insight within these pages, applicable to a multitude of fields and professions.

Topics Covered:

- Artificial Intelligence
- Robotics
- Cybernetics
- Human-Machine Interaction
- Mechatronics
- Autonomous Robots
- Computational Informatics
- Mobile Robots
- Robot Vision

ISBN: 9781466646070; © 2014; 1873 pp.

Print: US \$1,845.00 | Perpetual: US \$2,765.00

Print + Perpetual: US \$3,690.00

Pre-pub Discount:*

Print: US \$1,755.00 | Perpetual: US \$2,625.00

* Pre-pub price is good through one month after publication date.

Market: This premier publication is essential for all academic and research library reference collections. It is a crucial tool for academicians, researchers, and practitioners. Ideal for classroom use.

Information Resources Management Association (IRMA) is a research-based professional organization dedicated to advancing the concepts and practices of information resources management in modern organizations. IRMA's primary purpose is to promote the understanding, development and practice of managing information resources as key enterprise assets among IRM/IT professionals. IRMA brings together researchers, practitioners, academicians, and policy makers in information technology management from over 50 countries.



www.igi-global.com

Publishing Academic Excellence
at the Pace of Technology Since 1988

Section 1: Fundamental Concepts and Theories

Chapter 1

History of Service Robots

Zielinska Teresa (Warsaw University of Technology, Poland)

Chapter 2

Task Coordination for Service Robots Based on Multiple Markov Decision Processes

Elva Corona (National Institute of Astrophysics, Optics and Electronics, Mexico)

L. Enrique Sucar (National Institute of Astrophysics, Optics and Electronics, Mexico)

Chapter 3

Task Analysis and Motion Generation for Service Robots:

Jian S. Dai (University of London, UK)

Chapter 4

From Object Recognition to Object Localization

Rigas Kouskouridas (Democritus University of Thrace, Greece)

Antonios Gasteratos (Democritus University of Thrace, Greece)

Chapter 5

3D Scene Capture and Analysis for Intelligent Robotics

Ray Jarvis (Monash University, Australia)

Chapter 6

Support Vector Machine Based Mobile Robot Motion Control and Obstacle Avoidance

Lihua Jiang (Northeastern University, China)

Mingcong Deng (Tokyo University of Agriculture and Technology, Japan)

Chapter 7

A Framework for Prototyping of Autonomous Multi-Robot Systems for Search, Rescue, and Reconnaissance

Sedat Dogru (Middle East Technical University, Turkey)

Sebahattin Topal (Middle East Technical University, Turkey)

Aydan M. Erkmen (Middle East Technical University, Turkey)

Ismet Erkmen (Middle East Technical University, Turkey)

Chapter 8

Applications of DEC-MDPs in Multi-Robot Systems

Aur lie Beynier (University Pierre and Marie Curie, France)

Abdel-Ilhah Mouaddib (University of Caen, France)

Chapter 9

The Inevitability of Library Automation

Edward Iglesias (Central Connecticut State University, USA)

Chapter 10

Lending and Borrowing Library Materials:

Regina H. Gong (Lansing Community College, USA)

Dao Rong Gong (Michigan State University, USA)

Chapter 11

Educational Robotics Theories and Practice:

Amy Eguchi (Bloomfield College, USA)

Section 2: Development and Design Methodologies

Chapter 12

Mission Planning of Mobile Robots and Manipulators for Service Applications

Elias K. Xidias (University of the Aegean, Greece)

Nikos A. Aspragathos (University of Patras, Greece)

Philip N. Azariadis (University of the Aegean, Greece)

Chapter 13

Relational Representations and Traces for Efficient Reinforcement Learning

Eduardo F. Morales (National Institute of Astrophysics, Optics and Electronics, M xico)

Julio H. Zaragoza (National Institute of Astrophysics, Optics and Electronics, M xico)

Chapter 14

Gesture Learning by Imitation Architecture for a Social Robot

J.P. Bandera (University of M laga, Spain)

J.A. Rodr guez (University of M laga, Spain)

L. Molina-Tanco (University of M laga, Spain)

A. Bandera (University of M laga, Spain)

Chapter 15

A Human Affect Recognition System for Socially Interactive Robots

Derek McColl (University of Toronto, Canada)

Goldie Nejat (University of Toronto, Canada)

Chapter 16

Reasoning about Space, Actions, and Change:

Mehul Bhatt (University of Bremen, Germany)

Chapter 17

Intelligent Stereo Vision in Autonomous Robot Traversability Estimation

Lazaros Nalpantidis (Royal Institute of Technology – KTH, Sweden)

Ioannis Kostavelis (Democritus University of Thrace, Greece)

Antonios Gasteratos (Democritus University of Thrace, Greece)

Chapter 18

Mobile/Wireless Robot Navigation

Amina Waqar (National University of Computers and Emerging Sciences, Pakistan)

Chapter 19

Self Control and Server-Supervisory Control for Multiple Mobile Robots and its Applicability to Intelligent DNC System

F. Nagata (Tokyo University of Science, Japan)

T. Yamashiro (Tokyo University of Science, Japan)

N. Kitahara (Tokyo University of Science, Japan)

A. Otsuka (Tokyo University of Science, Japan)

K. Watanabe (Okayama University, Japan)

Maki K. Habib (The American University in Cairo, Egypt)

Chapter 20

Distributed Multi-Robot Localization

Stefano Panzieri (University Roma Tre, Italy)

Federica Pascucci (University Roma Tre, Italy)

Lorenzo Sciaivico (University Roma Tre, Italy)

Roberto Serola (University Campus Bio-Medico, Italy)

Chapter 21

Static and Dynamic Multi-Robot Coverage with Grammatical Evolution Guided by Reinforcement and Semantic Rules

Jack Mario Mingo (Autonomous University of Madrid, Spain)

Ricardo Aler (Carlos III University of Madrid, Spain)

Dario Maravall (Technical University of Madrid, Spain)

Javier de Lope (Technical University of Madrid, Spain)

Chapter 22

How Ants Can Efficiently Solve the Generalized Watchman Route Problem

Pawel Paduch (Kielce University of Technology, Poland)

Krzysztof Sapiecha (Kielce University of Technology, Poland)

Chapter 23

Distributed Task Allocation in Swarms of Robots

Aleksandar Jevti  (Robosoft, France)

Diego Andina (E.T.S.I.T.-Universidad Polit cnica de Madrid, Ciudad Universitaria, Spain)

Mo Jamshidi (University of Texas, USA)

Chapter 24

Design and Operation of Two Service Robot Arms:

Jean-Pierre Gazeau (Poitiers University, PPRIME Institute, CNRS UPR 3346, France)

Said Zeghloul (Poitiers University, PPRIME Institute, CNRS UPR 3346, France)

Chapter 25

Prototyping of Lunabotic Excavator Robotic System

Nicolae Gari (University of Bridgeport, USA)

Xingguo Xiong (University of Bridgeport, USA)

Section 3: Tools and Technologies

Chapter 26

Modular Cable-Driven Robotic Arms for Intrinsically Safe Manipulation

Wen Bin Lim (Nanyang Technological University, Singapore)

Guilin Yang (Singapore Institute of Manufacturing Technology, Singapore)

Song Huat Yeo (Nanyang Technological University, Singapore)

Shabbir Kurbanhusen Mustafa (Singapore Institute of Manufacturing Technology, Singapore)

Chapter 27

Portable Haptic Arm Exoskeleton

Pierre Letier (Space Applications Services N.V./S.A., Belgium)
André Preumont (Université Libre de Bruxelles (ULB), Belgium)

Chapter 28

Lagrangian Dynamics of Manipulators

Sandipan Bandyopadhyay (Indian Institute of Technology, India)

Chapter 29

Optimal Design of Three-Link Planar Manipulators Using Grashof's Criterion

Sarosh H. Patel (RISC Laboratory, University of Bridgeport, USA)
Tarek Sobh (RISC Laboratory, University of Bridgeport, USA)

Chapter 30

Medical Manipulators for Surgical Applications

Xing-guang Duan (Intelligent Robotics Institute, Beijing Institute of Technology, China)
Xing-tao Wang (Intelligent Robotics Institute, Beijing Institute of Technology, China)
Qiang Huang (Intelligent Robotics Institute, Beijing Institute of Technology, China)

Chapter 31

Needle Insertion Force Modeling using Genetic Programming Polynomial Higher Order Neural Network

Mehdi Fallahnezhad (Norwegian University of Science and Technology (NTNU), Norway)
Hashem Yousefi (Amirkabir University of Technology (Tehran Polytechnic), Iran)

Chapter 32

Small Medical Robot

Makoto Nokata (Ritsumeikan University, Japan)

Chapter 33

A Mechatronic Description of an Autonomous Underwater Vehicle for Dam Inspection

Ítalo Jäder Loliola Batista (Federal Institute of Education, Science, and Technology of Ceará, Brazil)
Antonio Themoteo Varela (Federal Institute of Education, Science, and Technology of Ceará, Brazil)
Edicarla Pereira Andrade (Federal Institute of Education, Science, and Technology of Ceará, Brazil)
José Victor Cavalcante Azevedo (Federal Institute of Education, Science, and Technology of Ceará, Brazil)
Tiago Lessa Garcia (Federal Institute of Education, Science, and Technology of Ceará, Brazil)
Daniel Henrique da Silva (Federal Institute of Education, Science, and Technology of Ceará, Brazil)
Epitácio Kleber Franco Neto (Federal Institute of Education, Science, and Technology of Ceará, Brazil)
Auzuir Ripardo Alexandria (Federal Institute of Education, Science, and Technology of Ceará, Brazil)
André Luiz Carneiro Araújo (Federal Institute of Education, Science, and Technology of Ceará, Brazil)

Chapter 34

Agile Wheeled Mobile Robots for Service in Natural Environment

Jean-Christophe Fauroux (Clermont University, France)
Belhassen-Chedli Bouzgarrou (Clermont University, France)
Nicolas Bouton (Clermont University, France)
Philippe Vaslin (Clermont University, France)
Roland Lenain (Clermont University, France)
Frédéric Chapelle (Clermont University, France)

Chapter 35

Prototyping and Real-Time Implementation of Bipedal Humanoid Robots:

Barkan Ugurlu (Toyota Technological Institute, Japan)
Atsuo Kawamura (Yokohama National University, Japan)

Chapter 36

Design of a Mobile Robot to Clean the External Walls of Oil Tanks

Hernán González Acuña (Universidad Autónoma de Bucaramanga, Colombia)
Alfonso René Quintero Lara (Universidad Autónoma de Bucaramanga, Colombia)
Ricardo Ortiz Guerrero (Universidad Autónoma de Bucaramanga, Colombia)
Jairo de Jesús Montes Alvarez (Universidad Autónoma de Bucaramanga, Colombia)
Hernando González Acevedo (Universidad Autónoma de Bucaramanga, Colombia)
Elkin Yesid Veslin Diaz (Universidad de Boyacá, Colombia)

Chapter 37

Hardware-in-the-Loop Testing of On-Board Subsystems:

Luca Pugi (University of Florence, Italy)
Benedetto Allotta (University of Florence, Italy)

Chapter 38

Attentive Visual Memory for Robot Localization

Julio Vega (Rey Juan Carlos University, Spain)
Eduardo Perdices (Rey Juan Carlos University, Spain)
José María Cañas (Rey Juan Carlos University, Spain)

Chapter 39

A Neuromorphic Robot Vision System to Predict the Response of Visual Neurons

Kazuhiro Shimonomura (Ritsumeikan University, Japan)

Chapter 40

Visual Control of an Autonomous Indoor Robotic Blimp

L. M. Alkurd (University of Edinburgh, UK)
R. B. Fisher (University of Edinburgh, UK)

Section 4: Utilization and Application

Chapter 41

Indoor Surveillance Application using Wireless Robots and Sensor Networks:

Anis Koubaa (Al-Imam Mohamed bin Saud University, Saudi Arabia & Polytechnic Institute of Porto (ISEP/IPP), Portugal)
Sahar Trigui (National School of Engineering, Tunisia)
Imen Chaari (National School of Engineering, Tunisia)

Chapter 42

Prototyping of Fully Autonomous Indoor Patrolling Mobile Robots

XiaoJun Wu (Data Storage Institute, A*STAR, Singapore)
Bingbing Liu (Institute for Infocomm Research, A*STAR, Singapore)
Jun-Hong Lee (Dyson Operations, Inc. Singapore)
Vikas Reddy (Kiva Systems, Inc. USA)
Xi Zheng (Thinking Dots, Inc. Singapore)

Chapter 43

Mobile Worm-Like Robots for Pipe Inspection

Sergey Jatsun (South-West State University, Russia)

Chapter 44

Study and Design of an Autonomous Mobile Robot Applied to Underwater Cleaning

Lafate Creomar Lima Junior (Federal University of Rio de Janeiro, Brazil)
Armando Carlos de Pina Filho (Federal University of Rio de Janeiro, Brazil)
Aloísio Carlos de Pina (Federal University of Rio de Janeiro, Brazil)

Chapter 45

Safer and Faster Humanitarian Demining with Robots

Emin Faruk Kececi (Istanbul Technical University, Turkey)

Chapter 46

A Swarm Robotics Approach to Decontamination

Daniel S. F. Alves (Instituto de Matemática, UFRJ, Brazil)
E. Elai M. Soares (Escola Politécnica, UFRJ, Brazil)
Guilherme C. Strachan (Escola Politécnica, UFRJ, Brazil)
Guilherme P. S. Carvalho (Escola Politécnica, UFRJ, Brazil)
Marco F. S. Xaud (Escola Politécnica, UFRJ, Brazil)
Marcos V. B. Couto (Escola Politécnica, UFRJ, Brazil)
Rafael M. Mendonça (UERJ, Brazil)
Renan S. Freitas (Escola Politécnica, UFRJ, Brazil)
Thiago M. Santos (Escola Politécnica, UFRJ, Brazil)
Vanessa C. F. Gonçalves (UERJ, Brazil)
Luiza M. Mourelle (UERJ, Brazil)
Nadia Nedjah (UERJ, Brazil)
Nelson Maculan (UERJ, Brazil)
Priscila M. V. Lima (Instituto de Ciências Exatas, UFRRJ, Brazil)
Felipe M. G. França (UERJ, Brazil)

Chapter 47

A Resource-Oriented Petri Net Approach to Scheduling and Control of Time-Constrained Cluster Tools in Semiconductor Fabrication

NaiQi Wu (Guangdong University of Technology, China)
MengChu Zhou (New Jersey Institute of Technology, USA & Tongji University, China)

Chapter 48

Unpredicted Trajectories of an Automated Guided Vehicle with Chaos

Magda Judith Morales Tavera (Universidade Federal do Rio de Janeiro, Brazil)
Omar Lengerke (Universidad Autónoma de Bucaramanga, Colombia)
Max Suell Dutra (Universidade Federal do Rio de Janeiro, Brazil)

Chapter 49
Stereoscopic Vision for Off-Road Intelligent Vehicles
Francisco Rovira-Más (Polytechnic University of Valencia, Spain)

Chapter 50
Mechatronics Technology for Solar Cells
H. Henry Zhang (Purdue University, USA)
Danny Rodriguez (Purdue University, USA)
Qiong Li (Purdue University, USA)

Chapter 51
Service Robots for Agriculture:
Andrea Manuello Bertetto (University of Cagliari, Italy)

Chapter 52
Transforming Technical Services:
Lai Ying Hsiung (University of California, Santa Cruz, USA)
Wei Wei (University of California, Santa Cruz, USA)

Chapter 53
Medical Robotics in K-12 Education
Ronald Rockland (New Jersey Institute of Technology, USA)
Howard Kimmel (New Jersey Institute of Technology, USA)
John Carpinelli (New Jersey Institute of Technology, USA)
Linda S. Hirsch (New Jersey Institute of Technology, USA)
Levella Burr-Alexander (New Jersey Institute of Technology, USA)

Chapter 54
Medical Robotics
Ahmad Taher Azar (Misr University for Science & Technology, Egypt)
M. Sam Eljamel (The University of Dundee, UK)

Chapter 55
Surgical Robots:
Tamás Haidegger (Budapest University of Technology and Economics, Hungary)

Chapter 56
Wearable Power Assist Robot Driven with Pneumatic Rubber Artificial Muscles
Toshiro Noritsugu (Okayama University, Japan)

Section 5: Organizational and Social Implications

Chapter 57
Gait Rhythm of Parkinson's Disease Patients and an Interpersonal Synchrony Emulation System based on Cooperative Gait
Hirotaka Uchitomi (Tokyo Institute of Technology, Japan)
Kazuki Suzuki (Tokyo Institute of Technology, Japan)
Tatsunori Nishi (Tokyo Institute of Technology, Japan)
Michael J. Hove (Tokyo Institute of Technology, Japan & Max Planck Institute for Human Cognitive and Brain Sciences, Germany)
Yoshihiro Miyake (Tokyo Institute of Technology, Japan)
Satoshi Orimo (Kanto Central Hospital, Japan)
Yoshiaki Wada (Nissan Tamagawa Hospital, Japan)

Chapter 58
Robot Modeling for Physical Rehabilitation
Rogério Sales Gonçalves (Federal University of Uberlândia, Brazil)
João Carlos Mendes Carvalho (Federal University of Uberlândia, Brazil)

Chapter 59
Interactive Games with Robotic and Augmented Reality Technology in Cognitive and Motor Rehabilitation
Ana Belén Naranjo-Saucedo (Virgen del Rocio University Hospital, Spain)
Cristina Suárez-Mejías (Virgen del Rocio University Hospital, Spain)
Carlos L. Parra-Calderón (Virgen del Rocio University Hospital, Spain)
Ester González-Aguado (Fundació Privada Sant Antoni Abat, Spain)
Frida Böckel-Martínez (Fundació Privada Sant Antoni Abat, Spain)
Antoni Yuste-Marco (Fundació Privada Sant Antoni Abat, Spain)
Pablo Bustos (University of Extremadura, Spain)
Luis Manso (University of Extremadura, Spain)
Pilar Bachiller (University of Extremadura, Spain)
Sergi Plana (m-BOT Solutions SL, Spain)
Jose M Diaz (m-BOT Solutions SL, Spain)
Ricardo Boniche (m-BOT Solutions SL, Spain)
Adrià Marco (m-BOT Solutions SL, Spain)

Chapter 60
An Integrated Framework for Robust Human-Robot Interaction
Mohan Sridharan (Texas Tech University, USA)

Chapter 61
Making Use of Multi-Modal Synchrony:
Britta Wrede (Bielefeld University, Germany)
Lars Schillingmann (Bielefeld University, Germany)
Katharina J. Rohlfing (Bielefeld University, Germany)

Chapter 62
Human-Friendly Mechatronics Systems with Functional Fluids and Elastomers
Takehito Kikuchi (Yamagata University, Japan)

Chapter 63
Effects of Human-Machine Integration on the Construction of Identity
Francesc Ballesté (Universitat Oberta de Catalunya, Spain)
Carme Torras (Institut de Robòtica i Informàtica Industrial, CSIC-UPC, Spain)

Chapter 64
Android Robots as Telepresence Media
Kohei Ogawa (ATR Hiroshi Ishiguro Laboratory, Japan)
Shuichi Nishio (ATR Hiroshi Ishiguro Laboratory, Japan)
Takashi Minato (ATR Hiroshi Ishiguro Laboratory, Japan)
Hiroshi Ishiguro (ATR Hiroshi Ishiguro Laboratory, Japan)

Chapter 65
Developmental Language Learning from Human/Humanoid Robot Social Interactions:
Artur M. Arsénio (Universidade Técnica de Lisboa, Portugal)

Chapter 66
Just Doesn't Look Right:
Julie Carpenter (University of Washington, USA)

Chapter 67
Robotic Hardware and Software Integration for Changing Human Intentions
Akif Durdu (Middle East Technical University, Turkey)
Ismet Erkmen (Middle East Technical University, Turkey)
Aydan M. Erkmen (Middle East Technical University, Turkey)
Alper Yilmaz (Photogrammetric Computer Vision Laboratory, The Ohio State University, USA)

Chapter 68
Building a Technoself:
Gail F. Melson (Purdue University, USA)

Chapter 69
The Mediating Role of Context in an Urban After-School Robotics Program:
John Y. Baker (University of Pennsylvania, USA)

Chapter 70
The Impact of Educational Robotics on Student STEM Learning, Attitudes, and Workplace Skills
Gwen C. Nugent (University of Nebraska-Lincoln, USA)
Bradley Barker (University of Nebraska-Lincoln, USA)
Neal Grandgenett (University of Nebraska-Omaha, USA)

Section 6: Emerging Trends

Chapter 71
Stereo Vision Depth Estimation Methods for Robotic Applications
Lazaros Nalpanidis (Royal Institute of Technology (KTH), Sweden)
Antonios Gasteratos (Democritus University of Thrace, Greece)

Chapter 72
Self-Calibration of Eye-to-Hand and Workspace for Mobile Service Robot
Jwu-Sheng Hu (National Chiao Tung University, Taiwan & Industrial Technology Research Institute, Taiwan)
Yung-Jung Chang (National Chiao Tung University, Taiwan & Industrial Technology Research Institute, Taiwan)

Chapter 73

Optimal Location of the Workpiece in a PKM-Based Machining Robotic Cell

E.J. Solteiro Pires (Universidade de Trás-os-Montes e Alto Douro, Portugal)
António M. Lopes (Universidade do Porto, Portugal)
J. A. Tenreiro Machado (Instituto Politécnico do Porto, Portugal)
P. B. de Moura Oliveira (Universidade de Trás-os-Montes e Alto Douro, Portugal)

Chapter 74

Visual Detection in Linked Multi-Component Robotic Systems

Jose Manuel Lopez-Guede (Basque Country University, Spain)
Borja Fernandez-Gauna (Basque Country University, Spain)
Ramon Moreno (Basque Country University, Spain)
Manuel Graña (Basque Country University, Spain)

Chapter 75

Ad Hoc Communications for Wireless Robots in Indoor Environments

Laura Victoria Escamilla Del Río (University of Colima, Mexico)
Juan Michel García Díaz (University of Colima, Mexico)

Chapter 76

Real-Time Fuzzy Logic-Based Hybrid Robot Path-Planning Strategies for a Dynamic Environment

Napoleon H. Reyes (Massey University, New Zealand)
Andre L.C. Barczak (Massey University, New Zealand)
Teo Susnjak (Massey University, New Zealand)
Peter Sinčák (Technical University of Košice, Slovakia)
Ján Vaščák (Technical University of Košice, Slovakia)

Chapter 77

Collaborative Exploration based on Simultaneous Localization and Mapping

Domenec Puig (Rovira i Virgili University, Spain)

Chapter 78

Modular Assembly Micro-Robots for Natural Orifice Transluminal Endoscopic Surgery

Apollon Zygomas (University of Patras, Greece & University Hospital of Patras, Greece)
Kostas Giokas (National Technical University of Athens, Greece)
Dimitris Koutsouris (National Technical University of Athens, Greece)

Chapter 79

Biorobotics

Arianna Menciassi (Scuola Superiore Sant'Anna, Italy)
Cecilia Laschi (Scuola Superiore Sant'Anna, Italy)

Chapter 80

Mobile Laboratory Model for Next-Generation Heterogeneous Wireless Systems

Ibrahima Ngom (École Supérieure Polytechnique/UCAD, Sénégal)
Hamadou Saliah-Hassane (Télé-université/UQAM, Canada)
Claude Lishou (École Supérieure Polytechnique/UCAD, Sénégal)

Chapter 81

Artificial Intelligence Techniques for Solar Energy and Photovoltaic Applications

Radian Belu (Drexel University, USA & Desert Research Institute, USA)

Chapter 82

Understanding the Human-Machine Interface in a Time of Change

Erica Orange (Weiner, Edrich, Brown, Inc., USA)

Chapter 83

A Neurobotics Approach to Investigating Word Learning Behaviors

Richard Veale (Indiana University, USA)

Order Your Copy Today!

Name: _____

Organization: _____

Address: _____

City, State, Zip: _____

Country: _____

Tel: _____

Fax: _____

E-mail: _____

☐ Enclosed is check payable to IGI Global in
US Dollars, drawn on a US-based bank

☐ Credit Card ☐ Mastercard ☐ Visa ☐ Am. Express

3 or 4 Digit Security Code: _____

Name on Card: _____

Account #: _____

Expiration Date: _____