The Next Big Technological Issue in Communications

Handbook on Theoretical and Algorithmic Aspects of Sensor, Ad Hoc Wireless, and Peer-to-Peer Networks

By Jie Wu
Florida Atlantic University
Boca Raton, USA

Highlights the most recent developments in the field

The availability of cheaper, faster, and more reliable electronic components has stimulated important advances in computing and communication technologies. Theoretical and algorithmic approaches that address key issues in sensor networks, ad hoc wireless networks, and peer-to-peer networks – simply called SAP networks – play a central role in the development of emerging network paradigms. Filling the need for a comprehensive reference on recent developments, Handbook on Theoretical and Algorithmic Aspects of Sensor, Ad Hoc Wireless, and Peer-to-Peer Networks explores two questions: What are the central technical issues in these SAP networks? What are the possible solutions/tools available to address these issues?

The editor brings together information from different research disciplines to initiate a comprehensive technical discussion on theoretical and algorithmic approaches to three related fields: sensor networks, ad hoc wireless networks, and peer-to-peer networks. With chapters written by authorities from Motorola, Bell Lab, Honeywell, and academic institutions, the book examines theoretical and algorithmic aspects, and highlights future research challenges. The book’s coverage includes theoretical and algorithmic methods and tools such as optimization, computational geometry, graph theory, and combinatorics. Although many books have emerged recently in this area, none of them address all three fields in terms of common issues.

FEATURES
• Coverage of ad hoc wireless, sensor, and peer-to-peer networks allows you to easily cross-reference similar results in three fields
• An international group of authors presents balanced coverage of research results
• Systematic treatment of theoretical and algorithmic aspects gives you easy access to important results
• Discussions of applications of networks offer good motivation for research in these fields
• Authoritative materials on a broad range of topics provide a comprehensive treatment of important issues by leading researchers
• Identification of common theoretical and algorithmic approaches that can address concepts related to SAP networks

CONTENTS
Preface

AD HOC WIRELESS NETWORKS
Routing Scalability in MANETs, J. Eriksson, S. Krishnamurthy, and M. Faloutsos
Uniformly Distributed Algorithm for Virtual Backbone Routing in Ad Hoc Wireless Networks, D.S. Kim
Maximum Necessary Hop Count for Packet Routing in MANETs, X. Chen and J. Shen
Efficient Strategy-Proof Multicast in Selfish Wireless Networks, X.-Y. Li
Geocasting in Ad Hoc and Sensor Networks, I. Stoimenovic
Topology Control for Ad hoc Networks: Present Solutions and Open Issues, C.-C. Shen and Z. Huang
Minimum-Energy Topology Control Algorithms in Ad Hoc Networks, J.Y. Halpern and L. Li
A Survey on Algorithms for Power Assignment in Wireless Ad Hoc Networks, G. Calinescu, O. Frieder, and P.-J. Wan
Energy Conservation for Broadcast and Multicast Routing in Wireless Ad Hoc Networks, J.-P. Sheu, Y.-S. Chen, and C.-Y. Chang
Linear Programming Approaches to Optimization Problems of Energy Efficiency in Wireless Ad Hoc Networks, H. Liu and X. Jia
Wireless Networks World and Security Algorithms, N. Sklavos, N.A. Moldovan, and O. Koufopavlou
Reliable Computing in Ad Hoc Networks, P.T. Eugster
Medium Access Control Protocols in Mobile Ad Hoc Networks: Problems and Solutions, H. Zhai and Y. Fang
On Using Ad Hoc Relaying in Next Generation Wireless Networks, B.S. Manoj and C.S. Ram Murthy
Ad Hoc Networks: A Flexible and Robust Data Communication, M. Abolhasan and T. Wysocki
Adaptive Cycle-Controlled E-Limited Polling in Bluetooth Piconets, J. Misic and V.B. Misic
Scalable Wireless Ad hoc Network Simulation, R. Barr, Z.J. Haas, and R. van Renesse

SENSOR NETWORKS

Catalog no. AU2832, July 2005, c. 856 pp.
ISBN: 0-8493-2832-2, $129.95 / £74.99

Auerbach Publications
Taylor & Francis Group
Contents continued Handbook on Theoretical and Algorithmic Aspects of Sensor, Ad Hoc Wireless, and Peer-to-Peer Networks

How To Structure Chaos: Initializing Ad Hoc and Sensor Networks, T. Moscosbroda and R. Wattenhofer
Self-Stabilizing Distributed Systems and Sensor Networks, Z. Shi and P.K. Spirnani
Routing and Broadcasting in Hybrid Ad Hoc and Sensor Networks, F. Ingelrest, D. Simplot-Ryl, and I. Stoimenovic
Distributed Algorithms for Deploying Mobile Sensors, G. Cao, G. Wang, T. La Porta, S. Phoha, and W. Zhang
Maintaining Sensing Coverage and Connectivity in Large Sensor Networks, H. Zhang and J.C. Hou
Advances in Target Tracking and Active Surveillance using Wireless Sensor Networks, Y. Zou and K. Chakrabarty
QoS Support for Delay Sensitive Applications in Wireless Networks of UAVs, I. Cárdei
Low Power Consumption Features of the IEEE 802.15.4 WPAN Standard, E.H. Callaway, Jr.

PEER-TO-PEER NETWORKS

Searching Techniques in Peer-to-Peer Networks, X. Li and J. Wu
Semantic Search in Peer-to-Peer Systems, Y. Zhu and Y. Hu
An Overview of Structured P2P Overlay Networks, S. El-Ansary and S. Haridi
Distributed Data Structures for Peer-to-Peer Systems, J. Aspnes and G. Shah
State Management in DHT with Last-Mile Wireless Extension, H.-C. Hsiao and C.-T. King
Topology Construction and Resource Discovery in Peer-to-Peer Networks, D. Li, X. Lu, and C. Xu
Peer-to-Peer Overlay Optimization, Y. Liu, L. Xiao, and L.M. Ni
Resilience of Structured Peer to Peer Systems: Analysis and Enhancement, D. Xuan, S. Chellappan, and X. Wang
SWAN: Highly Reliable and Efficient Network of True Peers, F.B. Holt, V. Bourassa, A.M. Bosnjakovic, and J. Popovic
Scalable and Secure P2P Overlay Networks, H. Shen, A.S. Brodie, C.-Z. Xu, and W. Shi
Peer-to-Peer Overlay Abstractions in MANETs, Y.C. Hu, S.M. Das, and H. Pucha

Please use this ORDER FORM, CALL or ORDER ONLINE at WWW.CRCPRESS.COM

Please indicate quantities next to the title(s) ordered below:

HANDBOOK ON THEORETICAL AND ALGORITHMIC ASPECTS OF SENSOR, AD HOC WIRELESS, AND PEER-TO-PEER NETWORKS
Catalog no. AU2832, ISBN: 0-8493-2832-2 at $129.95 / £74.99 each.

THE HANDBOOK OF AD HOC WIRELESS NETWORKS
Catalog no. 1232, ISBN: 0-8493-1332-5 at $149.95 / £85.00 each.

WIRELESS INTERNET HANDBOOK: TECHNOLOGIES, STANDARDS, AND APPLICATIONS
Catalog no. AU1502, ISBN: 0-8493-1502-6 at $99.95 / £57.99 each.

WIRELESS SENSOR NETWORKS: ARCHITECTURES AND PROTOCOLS
Catalog no. AU1823, ISBN: 0-8493-1823-8 at $99.95 / £57.99 each.

Region Delivery Time First Title Additional Title
USA/Canada 3-5 Days $5.99 $1.99
South America 7-14 Days $9.99 $3.99
Europe 3-5 Days $2.99 $1.99
Rest of World 7-21 Days $4.99 $2.99

Please indicate the number of copies of each title ordered below.

Name
Address
City State/Province Zip/Postal Code
Country

ORDERING LOCATIONS

In the Americas:

CRC PRESS
6000 Broken Sound Parkway, NW, Suite 300
Boca Raton, FL 33437, USA
Tel: 1-800-272-7777
Fax: 1-800-374-3401
E-mail: orders@taylorandfrancis.com

Rest of the World:

CRC PRESS / ITPS
Cherton House, North Way
Andover, Hants, SP10 3BE, UK
Tel (UK): +44 (0) 1264 34 2026
Tel (Int’l): +44 (0) 1264 34 3070
Fax: +44 (0) 1264 34 3005
E-mail: uk@txinfo@thomsonpublishingservices.co.uk

Corporate Offices

CRC PRESS UK
24-26 Blades Court, Deddore Road
London SW15 2NU, UK
Tel: 44 (0) 20 7017 6000
Fax: 44 (0) 20 7017 6747
E-mail: enquire@crcpress.com

CRC PRESS
6000 Broken Sound Parkway, NW, Suite 300
Boca Raton, FL 33437, USA
Tel: 1-800-272-7777
Fax: 1-800-374-3401
E-mail: orders@taylorandfrancis.com

www.crcpress.com