教育部顧問室95年度「通訊科技人才培育先導型計畫

通訊科技領域特定課程

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Sep. 2006

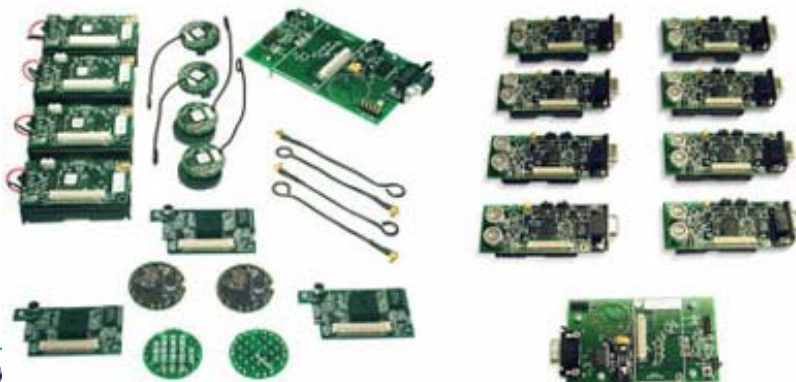# Advanced Techniques of Mobile Ad Hoc and Wireless Sensor Networks

- 「無線隨意及感測網路進階技術」

Mote Kits

課程內容大綱

- **PART I: Introduction**
  - Introduction to wireless networks
  - Wireless LAN
  - Wireless Transmission Principle
  - Wireless Personal-Area Networks - 802.15.4
  - Zigbee

Cont.

- **PART II: MIMO System**
  - Motivations
  - MIMO System Model and Capacity
  - Design Criterion for MIMO Systems
  - Networking Applications

Cont.

- PART III: **Directional/Smart Antenna System**
  - Motivations
  - Problem
  - Directional and Smart Antenna
  - Application

Cont.

- PART IV: **Wireless Sensor Networks**
  - Location Sensing and Applications
  - Sensor Network Applications
  - Sensor Network Coverage
  - MobiCast
  - Introduction: Mote

Cont.

- PART V: **Security on Wireless Sensor Networks**
    - Security Issue
    - Network Attack
    - Key Management
    - Fault Tolerance

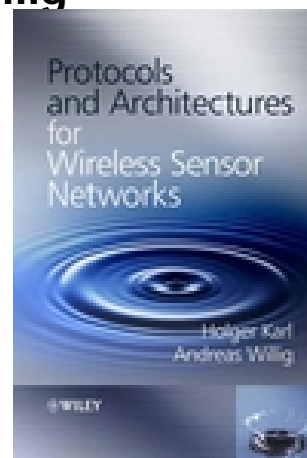# Protocols and Architectures for Wireless Sensor Networks

- By **Holger Karl, Andreas Willig**

Protocols and Architectures for Wireless Sensor Networks

Holger Karl
Andreas Willig

WILEY

Outline

- Motivation & Application
- Single node architecture
- Network architecture
- Physical layer
- MAC
- Link layer
- Naming & addressing

Cont.

- Time synchronization
- Localization & positioning
- Topology control
- Routing protocols
- Data-centric & content-based networking
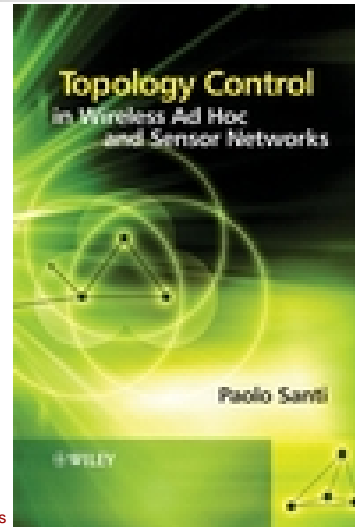- Transport protocols
- Advanced support

Topology Control in Wireless Ad Hoc and Sensor Networks

Topology Control
in Wireless Ad Hoc
and Sensor Networks

Paolo Santi

WILEY

WMN — Advanced Techniques of Mobile Ad Hoc and Wireless Sensor Networks

Mobile, Wireless, and Sensor Networks: Technology, Applications, and Future Directions
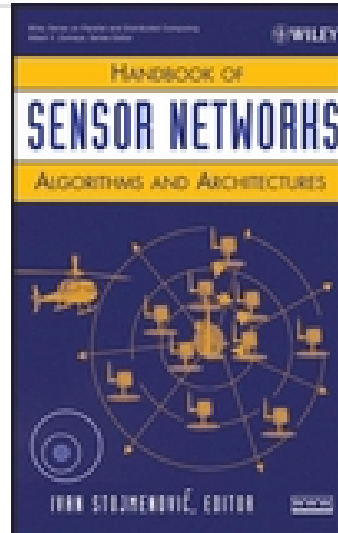
MOBILE, WIRELESS, AND SENSOR NETWORKS
Technology, Applications, and Future Directions

Edited by
RAJEEV SHOREY
A. ANANDA
MUN CHOON CHAN
WEI TSANG OOI

WMN — Advanced Techniques of Mobile Ad Hoc and Wireless Sensor Networks
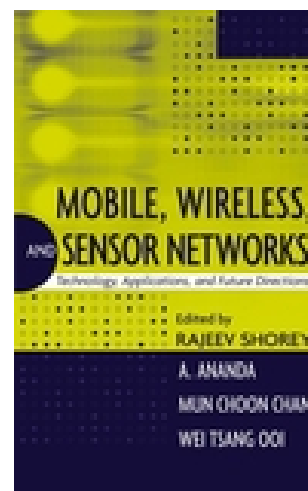
Handbook of Sensor Networks: Algorithms and Architectures

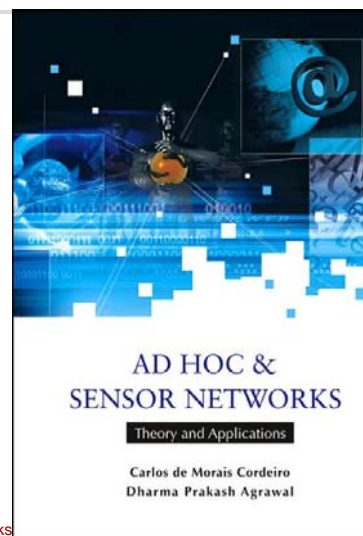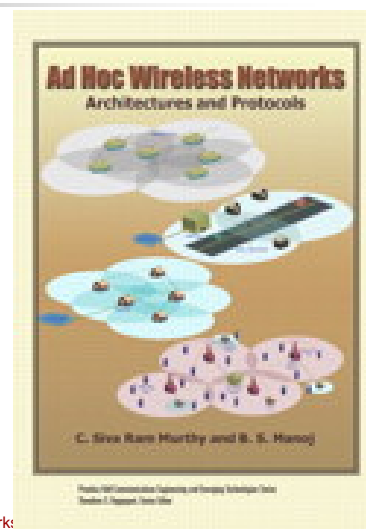# Ad Hoc & Sensor Networks, Theory and Applications

Outline

- Introduction
- Routing in ad hoc networks
- Broadcasting, multicasting and geocasting
- Wireless LANs
- Wireless PANs
- Directional antenna systems
- TCP over ad hoc networks
- Wireless sensor networks
- Data retrieval in sensor networks
- Security
- Integrating MANETs, WLANs and cellular networks

Ad Hoc Wireless Networks Architectures and Protocols

成績

- 考試
  - 期中考 (25%)
  - 期末考 (25%)
- Homeworks (20%)
- 實驗 (30 %)
  - 2 ~ 3 個實驗

Advanced Techniques of Mobile Ad Hoc and Wireless Sensor Networks