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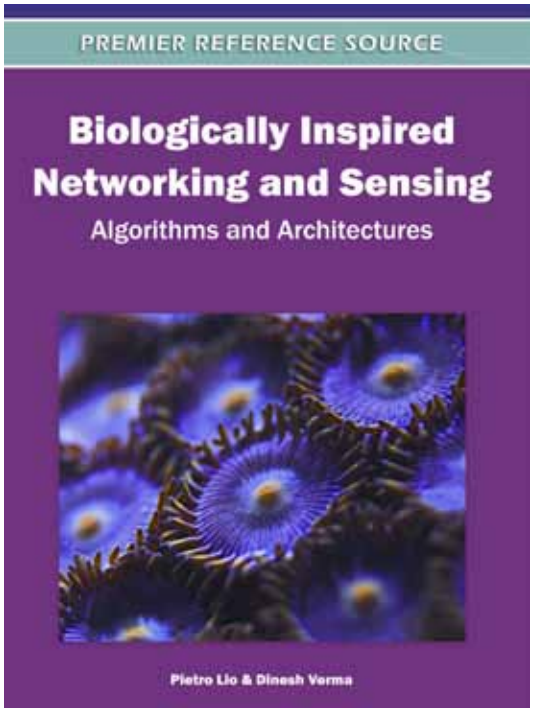
Biologically Inspired Networking and Sensing: Algorithms and Architectures



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Pietro Lio (University of Cambridge, UK) and Dinesh Verma (IBM, USA)

Despite their widespread impact, computer networks that provide the foundation for the World Wide Web and Internet have many limitations. These networks are vulnerable to security threats, break easily, and have a limited ability to respond to changing conditions. Recent research on overcoming these limitations has used biological systems for inspiration, resulting in the development of biologically-inspired computer networks. These networks are designed and developed using principles that are commonly found in natural and biological systems.

Biologically Inspired Networking and Sensing: Algorithms and Architectures offers current perspectives and trends in biologically-inspired networking, exploring various approaches aimed at improving network paradigms. Research contained within this compendium of papers and surveys introduces studies in the fields of communication networks, performance modeling, and distributed computing, as well as new advances in networking.

Topics Covered:

- Autonomic Data Dissemination in Ad Hoc Wireless Networks
- Autonomously Evolving Communication Protocols
- Biologically Inspired Congestion Control Mechanisms
- Biologically Inspired Routing Protocols
- Dendritic Cell Algorithm for Intrusion Detection
- Insect Built Networks
- Lotka Volterra Competition Model
- MANET Routing
- Networking Inspired by Cell Communication Mechanisms
- Neural Networks in Cognitive Science

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

Pietro Lio is a Senior Lecturer in the Computer Laboratory which is the department of Computer Science of the University of Cambridge and a member of the Artificial Intelligence group of the Computer Laboratory. He has an interdisciplinary approach to research and teaching and holds a PhD in Complex Systems and Non Linear Dynamics (School of Informatics, dept of Engineering of the University of Firenze, Italy) and a PhD in (Theoretical) Genetics (University of Pavia, Italy). His current research interest is the investigation of biomedical processes employing a combination of techniques, ranging from machine learning to deterministic and stochastic models.

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