



Complex Networks: An Algorithmic Perspective

By Kayhan Erciyes

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Complex Networks: An Algorithmic Perspective By Kayhan Erciyes

Network science is a rapidly emerging field of study that encompasses mathematics, computer science, physics, and engineering. A key issue in the study of complex networks is to understand the collective behavior of the various elements of these networks.

Although the results from graph theory have proven to be powerful in investigating the structures of complex networks, few books focus on the algorithmic aspects of complex network analysis. Filling this need, **Complex Networks: An Algorithmic Perspective** supplies the basic theoretical algorithmic and graph theoretic knowledge needed by every researcher and student of complex networks.

This book is about specifying, classifying, designing, and implementing mostly sequential and also parallel and distributed algorithms that can be used to analyze the static properties of complex networks. Providing a focused scope which consists of graph theory and algorithms for complex networks, the book identifies and describes a *repertoire* of algorithms that may be useful for *any* complex network.

- Provides the basic background in terms of graph theory
- Supplies a survey of the key algorithms for the analysis of complex networks
- Presents case studies of complex networks that illustrate the implementation of algorithms in real-world networks, including protein interaction networks, social networks, and computer networks

Requiring only a basic discrete mathematics and algorithms background, the book supplies guidance that is accessible to beginning researchers and students with little background in complex networks. To help beginners in the field, most of the algorithms are provided in ready-to-be-executed form.

While not a primary textbook, the author has included pedagogical features such as learning objectives, end-of-chapter summaries, and review questions

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Editorial Review

About the Author

Kayhan Erciyes is a professor of computer science and engineering and also the rector of Izmir University, Izmir, Turkey. Dr. Erciyes worked as a research and development engineer of Alcatel Turkey, Alcatel Portugal, and Alcatel SEL. He has worked as faculty in Oregon State University, UC Davis and California State University, US and Izmir and Aegean universities. His research interests are on distributed systems, graph theory and distributed algorithms for complex networks, mobile ad hoc networks, wireless sensor networks and the Grid and has published extensively in these areas. Dr. Erciyes is the designer and implementer of one of the first commercially available MODEMs in Turkey

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