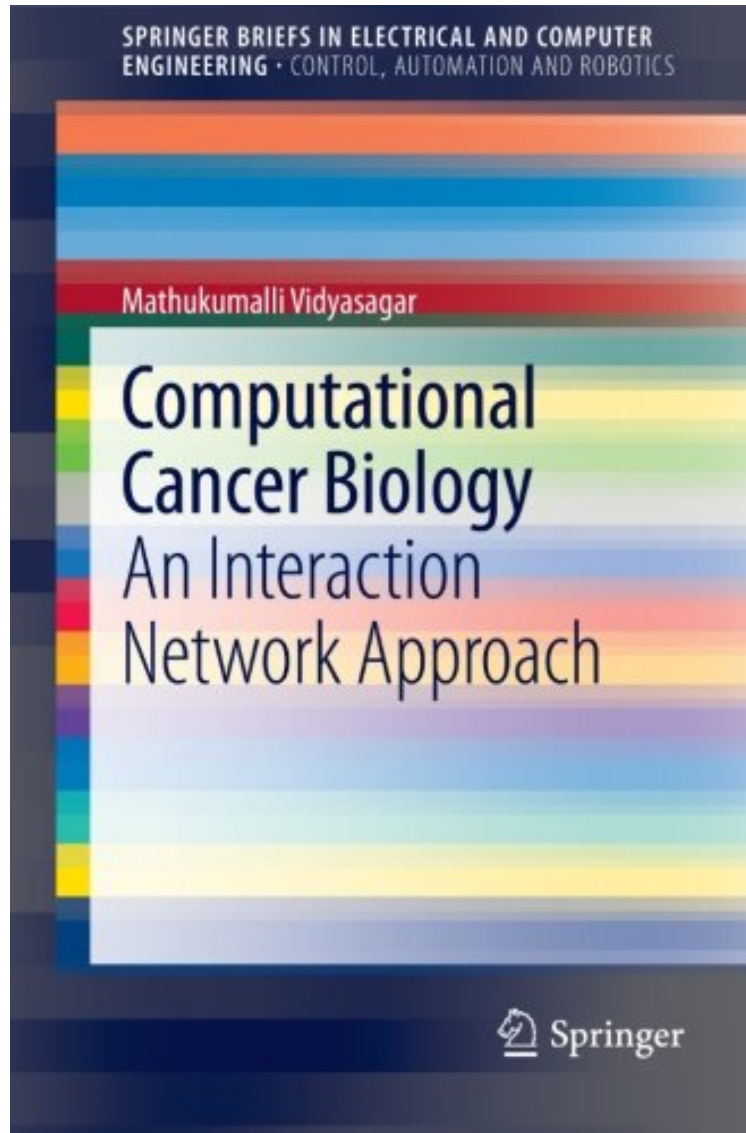


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Computational Cancer Biology: An Interaction Network Approach (SpringerBriefs in Electrical and Computer Engineering)

Mathukumalli Vidyasagar

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Mathukumalli Vidyasagar : Computational Cancer Biology: An Interaction Network Approach (SpringerBriefs in Electrical and Computer Engineering) before purchasing it in order to gage whether or not it would be worth my time, and all praised Computational Cancer Biology: An Interaction Network Approach

(SpringerBriefs in Electrical and Computer Engineering):

This brief introduces people with a basic background in probability theory to various problems in cancer biology that are amenable to analysis using methods of probability theory and statistics. The title mentions cancer biology and the specific illustrative applications reference cancer data but the methods themselves are more broadly applicable to all aspects of computational biology. Aside from providing a self-contained introduction to basic biology and to cancer, the brief describes four specific problems in cancer biology that are amenable to the application of probability-based methods. The application of these methods is illustrated by applying each of them to actual data from the biology literature. After reading the brief, engineers and mathematicians should be able to collaborate fruitfully with their biologist colleagues on a wide variety of problems.

From the Back Cover This brief introduces readers to various problems in cancer biology that are amenable to analysis using methods of probability theory and statistics, building on only a basic background in these two topics. Aside from providing a self-contained introduction to several aspects of basic biology and to cancer, as well as to the techniques from statistics most commonly used in cancer biology, the brief describes several methods for inferring gene interaction networks from expression data, including one that is reported for the first time in the brief. The application of these methods is illustrated on actual data from cancer cell lines. Some promising directions for new research are also discussed. After reading the brief, engineers and mathematicians should be able to collaborate fruitfully with their biologist colleagues on a wide variety of problems.

About the Author Mathukumalli Vidyasagar was born in Guntur, India on September 29, 1947. He received the B.S., M.S. and Ph.D. degrees in electrical engineering from the University of Wisconsin in Madison, in 1965, 1967 and 1969 respectively. Between 1969 and 1989, he was a Professor of Electrical Engineering at various universities in the USA and Canada. His last overseas job was with the University of Waterloo, Waterloo, ON, Canada, where he served between 1980 and 1989. In 1989 he returned to India as the Director of the newly created Centre for Artificial Intelligence and Robotics (CAIR) in Bangalore, under the Ministry of Defence, Government of India. Between 1989 and 2000, he built up CAIR into a leading research laboratory with about 40 scientists and a total of about 85 persons, working in areas such as flight control, robotics, neural networks, and image processing. In 2000 he moved to the Indian private sector as an Executive Vice President of India's largest software company, Tata Consultancy Services. In the city of Hyderabad, he created the Advanced Technology Center, an industrial RD laboratory of around 80 engineers, working in areas such as computational biology, quantitative finance, e-security, identity management, and open source software to support Indian languages. In 2009 he retired from TCS at the age of 62, and joined the Erik Jonsson School of Engineering and Computer Science at the University of Texas at Dallas, as a Cecil and Ida Green Chair in Systems Biology Science. In March 2010 he was named as the Founding Head of the newly created Bioengineering Department. His current research interests are in the application of stochastic processes and stochastic modeling to problems in computational biology, control systems and quantitative finance.