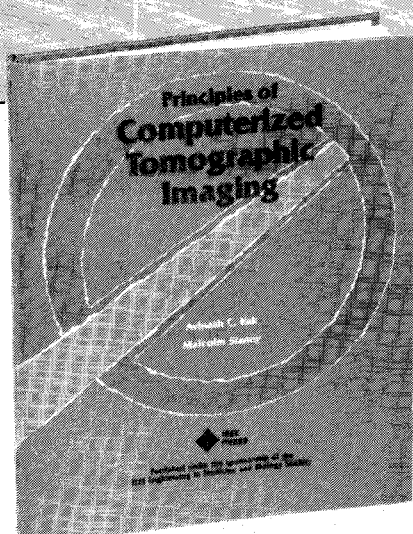


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Principles of Computerized Tomographic Imaging

Tomography refers to the cross-sectional imaging of an object from either transmission or reflection data collected by illuminating the object from many different directions. The impact of tomography in diagnostic medicine has been revolutionary, since it has enabled doctors to view internal organs with unprecedented precision and safety to the patient.

There are also numerous nonmedical imaging applications which lend themselves to methods of computerized tomography, such as mapping of underground resources... cross-sectional imaging for nondestructive testing... the determination of the brightness distribution over a celestial sphere... three-dimensional imaging with electron microscopy.

Principles of Computerized Tomographic Imaging provides a lucid tutorial overview of topics in tomographic imaging covering mathematical principles and theory... how to apply the theory to actual problems in medical imaging and other fields... several variations of tomography that are currently being researched.

Practicing engineers and scientists will find this book invaluable for gaining an understanding of what can and cannot be done with tomographic imaging. The style of presentation will also make the book highly appropriate for a beginning graduate course on the subject.

About the Authors

Avinash C. Kak is a professor of electrical engineering at Purdue University, where his current research includes programming paradigms for reasoning, especially in the domain of computer vision, and sensor and sensory integration for robots.

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Contents-in-brief: Introduction; Signal Processing Fundamentals; Algorithms for Reconstruction with Nondiffracting Sources; Measurement of Projection Data—The Nondiffracting Case; Aliasing Artifacts and Noise in CT Images; Tomographic Imaging with Diffracting Sources; Algebraic Reconstruction Algorithms; Reflection Tomography; Index; About the Authors.

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