

# Computed Tomography: Principles, Design, Artifacts, and Recent Advances (SPIE Press Monograph Vol. PM114)

*By Jiang Hsieh*

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**Computed Tomography: Principles, Design, Artifacts, and Recent Advances (SPIE Press Monograph Vol. PM114)** By Jiang Hsieh

X-ray computed tomography (CT) has experienced tremendous growth in recent years, in terms of both basic technology and new clinical applications. This book provides an overview of the evolution of CT, the mathematical and physical aspects of the technology, and the fundamentals of image reconstruction using algorithms. It examines image display from traditional methods through the most recent advancements, and it discusses key performance indices, theories behind the measurement methodologies, and different measurement phantoms in image quality. General descriptions and different categories of artifacts, their causes, and their corrections are considered at length.

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## **Editorial Review**

From the Back Cover

Six years after its first edition, *Computed Tomography: Principles, Design, Artifacts, and Recent Advances, Second Edition* provides an updated overview of the evolution of CT, the mathematical and physical aspects of the technology, and the fundamentals of image reconstruction algorithms. Given the high visibility and public awareness of the impact of x-ray radiation, the second edition features a new chapter on x-ray dose and presents different dose reduction techniques ranging from patient handling, optimal data acquisition, image reconstruction, and postprocess. Based on the advancements over the past six years, the second edition includes new sections on cone beam reconstruction algorithms, nonconventional helical acquisition and reconstruction, new reconstruction approaches, and dual-energy CT. Finally, new to this edition is a set of problems for each chapter, providing opportunities to enhance reader comprehension and practice the application of covered material.

About the Author

**Jiang Hsieh** is a Chief Scientist in the Applied Science Laboratory of GE Healthcare Technologies and an adjunct Professor in the Medical Physics Department of the University of Wisconsin, Madison. He has more than 20 years of experience in medical imaging. He holds over 100 US patents, has coauthored more than 100 articles, book chapters, and textbook.

## **Users Review**

**From reader reviews:**

**Mildred Bostwick:**

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