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Nota di contenuto	Chapter 1. Terahertz Spectrum in Biomedical Engineering -- Chapter 2. Electronic Sub-Terahertz VNA Measurement Techniques -- Chapter 3. Biological Tissue Interaction with Sub-Terahertz Spectrum -- Chapter 4. Non-invasive Sub-Terahertz Blood Glucose Measurement -- Chapter 5. Breast Tumor Margin Assessment using Sub-THz -- Chapter 6. Sub-THz and THz waves for Skin Diagnosis and Therapy -- Chapter 7. Machine Learning and Biomedical Sub-THz/THz Technology -- Chapter 8. Automation in Sub-THz/THz Imaging Systems -- Index.
Sommario/riassunto	This book offers the readers an opportunity to acquire the concepts of artificial intelligence (AI) enabled sub-THz systems for novel

applications in the biomedical field. The readers will also be inspired to contextualize these applications for solving real life problems such as non-invasive glucose monitoring systems, cancer detection and dental imaging. The introductory section of this book focuses on existing technologies for radio frequency and infrared sensing in biomedical applications, and their limited use in sensing applications, as well as the advantages of using THz technology in this context. This is followed by a detailed comparative analysis of THz electronics technology and other conventional electro optic THz setups highlighting the superior efficiency, affordability and portability of electronics-based THz systems. The book also discusses electronic sub-THz measurement systems for different biomedical applications. The chapters elucidate two major applications where sub-THz provides an edge over existing state of the art techniques used for non-invasive measurement of blood glucose levels and intraoperative assessment of tumor margins. There is a detailed articulation of an application of leveraging machine learning for measurement systems for non-invasive glucose concentration measurement. This helps the reader relate to the output in a more user-friendly format and understand the possible use cases in a more lucid manner. The book is intended to help the reader learn how to build tissue phantoms and characterize them at sub-THz frequencies in order to test the measurement systems. Towards the end of the book, a brief introduction to system automation for biomedical imaging is provided as well for quick analysis of the data. The book will empower the reader to understand and appreciate the immense possibilities of using electronic THz systems in the biomedical field, creating gateways for fueling further research in this area.