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Soggetti	Artificial intelligence Music - Mathematics Computational linguistics Music - Philosophy and aesthetics Semiotics Logic, Symbolic and mathematical Artificial Intelligence Mathematics in Music Computational Linguistics Philosophy of Music Mathematical Logic and Foundations
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Nota di contenuto	Chapter 1: Toward the Machine Computing Semantics of Music -- Chapter 2: Mathematics of Temperament: Principle and Development -- Chapter 3: Music and Natural Language -- Chapter 4: Berklee Method -- Chapter 5: Implication-Realization Model -- Chapter 6: Generative Theory of Tonal Music and Tonal Pitch Space -- Chapter 7: Formalization of GTTM -- Chapter 8: Implementation of GTTM -- Chapter 9: Application of GTTM -- Chapter 10: Epilogue.
Sommario/riassunto	This book presents a new approach to computational musicology in which music becomes a computational entity based on human cognition, allowing us to calculate music like numbers. Does music

have semantics? Can the meaning of music be revealed using symbols and described using language? The authors seek to answer these questions in order to reveal the essence of music. Chapter 1 addresses a very fundamental point, the meaning of music, while referring to semiotics, gestalt, Schenkerian analysis and cognitive reality. Chapter 2 considers why the 12-tone equal temperament came to be prevalent. This chapter serves as an introduction to the mathematical definition of harmony, which concerns the ratios of frequency in tonic waves. Chapter 3, “Music and Language,” explains the fundamentals of grammar theory and the compositionality principle, which states that the semantics of a sentence can be composed in parallel to its syntactic structure. In turn, Chapter 4 explains the mostprevalent score notation – the Berklee method, which originated at the Berklee School of Music in Boston – from a different point of view, namely, symbolic computation based on music theory. Chapters 5 and 6 introduce readers to two important theories, the implication-realization model and generative theory of tonal music (GTTM), and explain the essence of these theories, also from a computational standpoint. The authors seek to reinterpret these theories, aiming at their formalization and implementation on a computer. Chapter 7 presents the outcomes of this attempt, describing the framework that the authors have developed, in which music is formalized and becomes computable. Chapters 8 and 9 are devoted to GTTM analyzers and the applications of GTTM. Lastly, Chapter 10 discusses the future of music in connection with computation and artificial intelligence. This book is intended both for general readers who are interested in music, and scientists whose research focuses on music information processing. In order to make the content as accessible as possible, each chapter is self-contained.