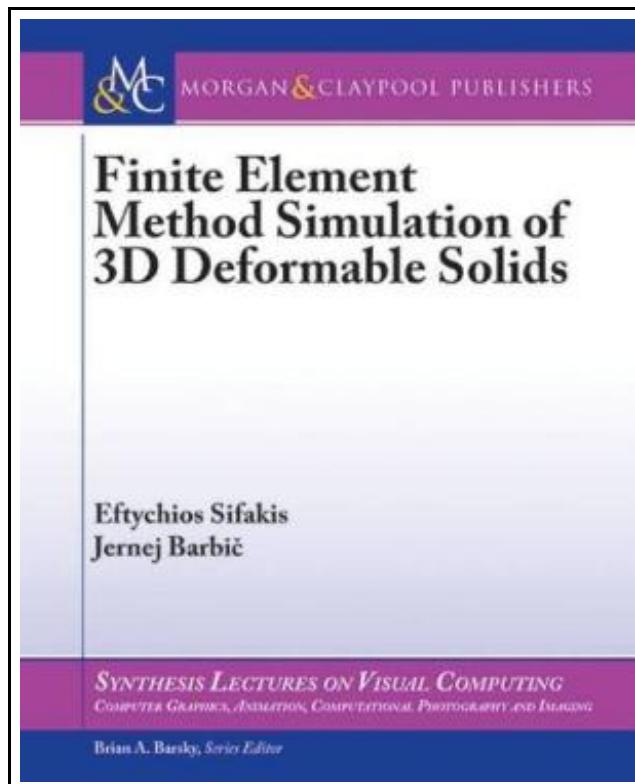


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This book is great. it was written quite flawlessly and helpful. You will not truly feel monotony at whenever you want of your time (that's what catalogs are for concerning if you ask me).
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Morgan Claypool Publishers, United States, 2015. Paperback. Book Condition: New. 235 x 187 mm. Language: English . Brand New Book ***** Print on Demand *****.This book serves as a practical guide to simulation of 3D deformable solids using the Finite Element Method (FEM). It reviews a number of topics related to the theory and implementation of FEM approaches: measures of deformation, constitutive laws of nonlinear materials, tetrahedral discretizations, and model reduction techniques for real-time simulation.Simulations of deformable solids are important in many applications in computer graphics, including film special effects, computer games, and virtual surgery. The Finite Element Method has become a popular tool in many such applications. Variants of FEM catering to both offline and real-time simulation have had a mature presence in computer graphics literature. This book is designed for readers familiar with numerical simulation in computer graphics, who would like to obtain a cohesive picture of the various FEM simulation methods available, their strengths and weaknesses, and their applicability in various simulation scenarios. The book is also a practical implementation guide for the visual effects developer, offering a lean yet adequate synopsis of the underlying mathematical theory.Chapter 1 introduces the quantitative descriptions used to capture the deformation of elastic solids, the concept of strain energy, and discusses how force and stress result as a response to deformation. Chapter 2 reviews a number of constitutive models, i.e., analytical laws linking deformation to the resulting force that has successfully been used in various graphics-oriented simulation tasks. Chapter 3 summarizes how deformation and force can be computed discretely on a tetrahedral mesh, and how an implicit integrator can be structured around this discretization. Finally, chapter 4 presents the state of the art in model reduction techniques for real-time FEM solid simulation and discusses which techniques are suitable for which applications....



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