1. Record Nr.   UNINA9910299990203321

   Titolo   Future Vision and Trends on Shapes, Geometry and Algebra / / edited by Raffaele de Amicis, Giuseppe Conti

   Pubbl/distr/stampa   London : , : Springer London : , : Imprint : Springer, , 2014

   ISBN   1-4471-6461-X

   Edizione   [1st ed. 2014.]

   Descrizione fisica   1 online resource (166 p.)

   Collana   Springer Proceedings in Mathematics & Statistics, , 2194-1017 ; ; 84

   Disciplina   516.35

   Soggetti   Geometry, Algebraic
   Algebraic fields
   Polynomials
   Mathematics
   Algorithms
   Geometry
   Mathematical models
   Algebraic Geometry
   Field Theory and Polynomials
   Applications of Mathematics
   Mathematical Modeling and Industrial Mathematics

   Lingua di pubblicazione   Inglese

   Formato   Materiale a stampa

   Livello bibliografico   Monografia

   Note generali   Description based upon print version of record.

   Nota di bibliografia   Includes bibliographical references at the end of each chapters.

   Nota di contenuto   Introduction -- Future Shape Modelling Scenarios -- A Hilbert-Driven Strategy for Signature-based Gröbner Basis Algorithms -- Numerical Algebraic Geometry and Differential Equations -- Sparse Discriminants and Applications -- Parametrization of the Bisector of Two Low Degree Surfaces -- Computer Aided Algebraic Geometry: Constructing Surfaces of Genus Zero -- Elastic Bone Transformation for Realistic Facial Animation in Web GL -- Geometric Features for Hand-Written Signatures -- Using 2D Contours to Model Metal Sheets in Industrial Machining Processes -- The Case for Scripted Process Design and Engineering.

   Sommario/riassunto   Mathematical algorithms are a fundamental component of Computer Aided Design and Manufacturing (CAD/CAM) systems. This book

provides a bridge between algebraic geometry and geometric modelling algorithms, formulated within a computer science framework. Apart from the algebraic geometry topics covered, the entire book is based on the unifying concept of using algebraic techniques – properly specialized to solve geometric problems – to seriously improve accuracy, robustness and efficiency of CAD-systems. It provides new approaches as well as industrial applications to deform surfaces when animating virtual characters, to automatically compare images of handwritten signatures, and to improve control of NC machines. This book further introduces a noteworthy representation based on 2D contours, which is essential to model the metal sheet in industrial processes. It additionally reviews applications of numerical algebraic geometry to differential equations systems with multiple solutions and bifurcations. Future Vision and Trends on Shapes, Geometry and Algebra is aimed specialists in the area of mathematics and computer science on the one hand and on the other hand at those who want to become familiar with the practical application of algebraic geometry and geometric modelling such as students, researchers, and doctorates.