1. Record Nr. UNINA9910736026803321 Autore Cristiani Emiliano Titolo Mathematical Methods for Objects Reconstruction: From 3D Vision to 3D Printing / / edited by Emiliano Cristiani, Maurizio Falcone †, Silvia Tozza Singapore:,: Springer Nature Singapore:,: Imprint: Springer.. 2023 Pubbl/distr/stampa **ISBN** 981-9907-76-4 Edizione [1st ed. 2023.] Descrizione fisica 1 online resource (185 pages) Collana Springer INdAM Series, , 2281-5198 ; ; 54 Altri autori (Persone) Falcone +Maurizio TozzaSilvia Disciplina 621.988 Soggetti Differential equations Mathematics Mathematics—Data processing **Differential Equations** Applications of Mathematics Computational Mathematics and Numerical Analysis Matemàtica Impressió 3D Visualització tridimensional Llibres electrònics Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia 1 Emiliano Cristiani, Maurizio Falcone, and Silvia Tozza, An Overview of Nota di contenuto Some Mathematical Techniques and Problems Linking 3D Vision to 3D Printing -- 2 Georg Radow, Giuseppe Rodriguez, Ashkan Mansouri Yarahmadi, and Michael Breuß, Photometric Stereo with Non-Lambertian Preprocessing and Hayakawa Lighting Estimation for Highly Detailed Shape Reconstruction -- 3 Toby Collins and Adrien Bartoli, Shape-from-Template with Camera Focal Length Estimation -- 4 J. Andreas Bærentzen, Ida Bukh Villesen, Ebba Dellwik, Reconstruction of

a Botanical Tree from a 3D Point Cloud -- 5 Jesse Beisegel, Johannes Buhl, Rameez Israr, Johannes Schmidt, Markus Bambach, and Armin Fügenschuh, Mixed-Integer Programming Models for Two Metal

Sommario/riassunto

Additive Manufacturing Methods -- 6 Ashkan Mansouri Yarahmadi, Michael Breuss, Carsten Hartmann, Toni Schneidereit, Unsupervised Optimization of Laser Beam Trajectories for Powder Bed Fusion Printing and Extension to Multiphase Nucleation Models.

The volume collects several contributions to the INDAM workshop Mathematical Methods for Objects Reconstruction: from 3D Vision to 3D Printing held in Rome, February, 2021. The goal of the workshop was to discuss new methods and conceptual structures for managing these challenging problems. The chapters reflect this goal and the authors are academic researchers and some experts from industry working in the areas of 3D modeling, computer vision, 3D printing and/or developing new mathematical methods for these problems. The contributions present methodologies and challenges raised by the emergence of large-scale 3D reconstruction applications and low-cost 3D printers. The volume collects complementary knowledges from different areas of mathematics, computer science and engineering on research topics related to 3D printing, which are, so far, widely unexplored. Young researchers and future scientific leaders in the field of 3D data acquisition, 3D scene reconstruction, and 3D printing software development will find an excellent introduction to these problems and to the mathematical techniques necessary to solve them.