METADATA

Title: Computer Graphics and Virtual Reality

Other Titles: Theory and Applications

Language: Greek

ISBN: 978-960-603-255-4

Subject: MATHEMATICS AND COMPUTER SCIENCE

Keywords: Computer Graphics / Virtual Reality / Simulation

Bibliographic Reference: Moustakas, K., Paliokas, I., Tsakiris, A., & Tzovaras, D. (2015). Computer Graphics and Virtual Reality [Undergraduate textbook]. Kallipos, Open Academic Editions. http://dx.doi.org/10.57713/kallipos-574

Abstract

This textbook presents the main concepts of the field of Computer Graphics, Virtual and Augmented Reality and is addressed to undergraduate and postgraduate students, as well as to all those who have theoretical and practical interest in this area. Although the majority of the concepts described are not new, the added value of writing a modern textbook includes the latest developments in the field, while at the same time it can present information to the reader in a more straight forward, interactive and understandable way. Especially the electronic version of the book aims to develop an interactive relationship with the reader by presenting multimedia content -along with the printed format-, such as videos and interactive exercises. The authoring team hopes that the readers will learn while having fun from the present book. The chapter contents aim at scientists and practitioners interested in gaining a deep understanding of the theoretical concepts in the field of computer generated graphics and its applications in Virtual and Augmented Reality. Due to its interactive nature, it can be used by both novice readers and experts in the field. Through this book, readers can gain a strong theoretical background necessary for understanding concepts related to: • 3D rendering • Transformations in 2 and 3 dimensions • 3D object representation • Clipping, cropping, color, texture, and lighting • Motion and physics-based simulation • Virtual Reality • Augmented Reality The book has been designed to gradually engage the reader, initially presenting fundamental concepts necessary for understanding more complex processes. Then, more complex yet intriguing problems and processes are analyzed. Overall, it can be divided into three parts: Part 1: Chapters 2 to 6 Fundamental concepts of graphics Part 2: Chapters 7-8 Advanced topics in graphics Part 3: Chapters 9-10 Cutting-edge technologies in the field of Computer Graphics and Virtual Reality

The Project is funded by the National Development Programme 2021-2025 of the Ministry of Education and Religious Affairs and implemented by the Special Account for Research Funds of the National Technical University of Athens and the Hellenic Academic Libraries Link.