Ηλίας Καρασαββίδης

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METADATA

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Abstract

This textbook provides a comprehensive overview of a rationale for the design and development of Serious Digital Games (SDG). It addresses the gap between conventional game design, which prioritize entertainment, and SDG, which are specifically crafted to facilitate learning. The book is structured into four distinct sections. The first section explores the concept of games and contextualizes it within the literature. It delves into the definitions of games and SDG, while also presenting the main theoretical frameworks that underpin various conceptualizations of games. This section concludes with an in-depth review of empirical research on how digital games contribute to learning. The second section addresses issues related to SDG. Specifically, the main game components are presented: system, rules, mechanics, and story. Additionally, various SDG models are comparatively examined. Finally, a comprehensive synthetic model for SDG design is introduced that integrates four main dimensions: conventional, academic, narrative, and learning. The third section delves into the processes involved in game asset development. Based on the serious game scenario, an overview of the process of concept art is briefly presented. Next, the various modeling techniques are analyzed and the principal methods for texture creation are illustrated and explained. Furthermore, the process of animation is introduced using skeletal systems and rigs. This section is concluded with a presentation of lighting, shadows, and rendering. The final section explores issues related to programming the game logic. Specifically, the main game engine sub-systems are presented and the script creation processes are analyzed, discussing both visual scripting and high-level language scripting. Overall, this textbook serves as a comprehensive guide to the design and development of SDG. It offers a grounded approach that integrates educational, learning, artistic, and technical dimensions.