Table of Contents

Section 1
Game Design Principles

Chapter 1
A survey on Game Backend Services
Ricardo Queirós
Polytechnic Institute of Porto (IPP) & Center for Research in Advanced Computing Systems (CRACS/INESC-TEC);

Chapter 2
Learning Engineering Skills Through Creativity and Collaboration: a Game-Based Proposal
Marisa Gil
Universitat Politècnica de Catalunya
Beatriz Otero
Universitat Politècnica de Catalunya

Chapter 3
Mastering Educational Computer Games, Educational Video Games, and Serious Games in the Digital Age
Kijpokin Kasemsap
Suan Sunandha Rajabhat University

Chapter 4
Principles of a Casual Serious Game to Support Introductory Programming Learning in Higher Education
Adilson Vahldick
Universidade do Estado de Santa Catarina (UDESC), Ibirama, SC, Brazil
Maria J. Marcelino
Universidade de Coimbra
António J. Mendes
Universidade de Coimbra

Chapter 5
The Introductory Programming Course: A Game Design Approach for the E-learning Environment
Nancy L. Martín
Southern Illinois University
Andrey Soares
Southern Illinois University

Section 2
Gamification Strategies in Computer Programming Learning

Chapter 6
Applying Gamification in a Parallel Programming Course
Chapter 7
Game-Based Approaches, Gamification and Programming Language Training
Serhat Bahadır Kert
Yıldız Teknik Üniversitesi
Mehmet Fatih ERKOÇ
Yıldız Technical University

Chapter 8
Pedagogical Mini-Games Integrated into Hybrid Course to Improve Understanding of Computer Programming: Skill Building Without the Coding Constraints
Walter Nuninger
University of Lille
Jean-Marie CHATELET
University of Lille

Chapter 9
Using 3D Virtual Worlds integrated to Remote Experimentation in Sciences Teaching
Caroline Porto Antonio
Federal University of Santa Catarina
José Pedro Schardosim Simão
Federal University of Santa Catarina
João Bosco da Mota Alves
Federal University of Santa Catarina
Juarez Bento da Silva
Federal University of Santa Catarina
Aline Coelho dos Santos
Federal University of Santa Catarina

Chapter 10
Using Game Frameworks to teach Computer Programming
Alberto Simões
Instituto Politécnico do Cávado e do Ave
Section 3
Frameworks and Tools

Chapter 11
Moodle Game-based Tool Trivioddle to Support the Learning of Programming Languages and Paradigms
Miriam Antón Rodríguez
University of Valladolid
María Ángeles Pérez Juárez
University of Valladolid
Francisco Javier Díaz Pernas
University of Valladolid

Chapter 12
Playing With Programming: A serious game to start programming
Anabela de Jesus Gomes
Coimbra Institute of Engineering, Portugal
Álvaro Nuno Ferreira Silva Santos
Coimbra Institute of Engineering, Portugal
César Paulo das Dores Páris
Coimbra Institute of Engineering, Portugal
Nuno Cid Martins
Coimbra Institute of Engineering, Portugal

Chapter 13
Scripting Environments of Gamified Learning Management Systems for Programming Education
Jakub Swacha
University of Szczecin

Chapter 14
Using a gamification service on a IDE for learning programming languages
José Paulo Leal
Center for Research in Advanced Computing Systems (CRACS/INESC-TEC)
José Paiva
Center for Research in Advanced Computing Systems (CRACS/INESC-TEC)
Ricardo Queirós
Center for Research in Advanced Computing Systems (CRACS/INESC-TEC)