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| Author(s) | 左, 龍 |
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| Description | Supervisor:飯田 弘之, 情報科学研究科, 博士 |

Abstract

Recent years, mass-market consumer software has rapidly gained popularity and inspiration from video games. Usually summarized as “gamification”, this trend is associated with a sizeable body of existing concepts and research in game studies and human-computer interaction, such as pervasive games, serious games, alternate reality games, or playful design. However, it is not clear how “gamification” relates to these, whether it denotes a novel phenomenon, and how to define it.

Every game has its game mechanics. These are the rules and procedures that guide the player and the game responds to the player's moves or actions and that is how game elements and game design work. Every game has “elements” or features that keep people engaged and the core of gamification is the game elements. Some games have a lot; others have very few. The choice of what to include should be deliberate. In this thesis we will explain why the concept of games is deeper than what most people realize, and how game elements serve as a foundation for gamification.

The “game informatics” has been established as a new research area in the field of information and computer science. This thesis focuses on the game refinement theory application and its development in MOBA game, business and education domain. The present contributions can be divided into two parts: fun game and serious game. This thesis has two directions, one is the analysis of the game elements by using different assessment, and the other is the application of game refinement theory. Previous work is mainly focused on the application of game refinement theory to sports game and board games. We noticed that these games usually have a pure game progress and share the same zone value. For sufficiently complex games like MOBA game and reality gamification case, we still don't know how to figure out the main game progress as this game may have two or three progress. Meanwhile, whether game refinement has a good universality is still an opening question. With such research background, we solve the question in the following way.

Chapter 1 introduces the background of the study and the research question of this thesis. Chapter 2 presents the mathematical model of game refinement theory. Chapter 3 focuses on the evolutionary changes of a sufficiently complex MOBA game called DOTA2. Chapter 4 proposes a novel method to illustrate the entertainment impact of educational purpose game and discover the effects of game elements and course structure. Chapter 5 explores the benefits of a sales promotion in the aviation industry known as frequent-flyer Program. Chapter 6 analyzes the case study of Starbucks with considering the gamification effect of loyalty program and its assessment using game refinement measure. Chapter 7 employs the game refinement theory, analytic hierarchy process and return on investment to comprehensively evaluate the game sophistication of hotel loyalty program in business domain. Chapter 8 gives the conclusion in which research questions and problem statement in this thesis are answered, and suggests several possible future works.

Keywords: Game Elements, Game refinement theory, Gamification, Fun Game, Serious Game, Business