# Exploration through video games

Gómez Maureira, M.A.

# Summary

This thesis manuscript presents research on curiosity-driven exploration in video games and the use of video games to facilitate research and education as tools for conceptual exploration. The main research question throughout the work is: *How do video games facilitate exploration?*

The question is investigated from different perspectives across nine chapters that range from elaborating on existing work and defining involved concepts and terminology (Chapter 2), to empirical research studies (Chapters 3-7). These studies include user surveys, the iterative design of video game artifacts, and user studies of the created artifacts. The penultimate chapter outlines the increasingly common practice of using games as research tools (Chapter 8).

Chapter 3 poses the research question of *How can a video game facilitate conceptual exploration?* In an effort to answer the question through design practice, the chapter describes the creation of *CURIO*, a video game developed for classroom use that requires its players to ask critical and original questions about topics that can be defined by a teacher. The study revealed the need to highlight information gaps to stimulate curiosity for conceptual exploration. It further formed the basis for a subsequent investigation of game types.

Chapter 4 investigates the question: *What types of video games elicit exploration?* A survey of video game players was conducted to answer this question. The result was that games that balance uncertainty and structure were more likely to elicit curiosity to explore.

In Chapter 5, the survey results are used to formulate a hypothesis for the question: *What design patterns can be hypothesized for video games that elicit exploration?* Three

types of curiosity-based exploration are examined in detail: conceptual, social, and spatial exploration.

Chapters 6 and 7 pose two related research questions: *How can design patterns for exploration be implemented for validation?* and *How do design patterns for exploration influence player behavior and experience?* The research game *Shinobi Valley* was created and tested through an initial user study. The subsequent study discussed in Chapter 7 presented evidence that hypothesized design patterns effectively elicit exploratory behavior.

Chapter 8 raises the question: *How are video games used as tools for academic exploration?* It provides an overview of video games used in research efforts and reflects on using *CURIO* and *Shinobi Valley* as research tools.

In the final chapter, the manuscript concludes by summarizing the insights of the individual chapters, outlining the research contributions, and providing directions for future research.