

Developing a new type of recommendation system based on interdisciplinary research in the gaming area

【代表者】鄭 雲珊 (CHENG YunShan) 島根大学総合理工学部 知能情報デザイン学科 助教

【研究の目的と内容】

The current research project continues to build upon last year's efforts to develop an Enhanced Value-Based Recommender (EVBR) system through interdisciplinary exploration in the field of gaming. The central objective remains to better understand users' underlying motivations and values when engaging with games, and to use this understanding to improve recommendation accuracy. This year's extension further focused on qualitative research methods, such as in-depth interviews and user behavior analysis, to refine the design of the EVBR system.

Key efforts this year included investigating puzzle games (e.g., Tetris), FPS games (e.g., Valorant), and mobile AR games (e.g., Pokémon GO), to capture a wide range of play styles, emotional responses, and motivational factors. The research also introduced generative AI tools, such as GPT-4.0, as both interviewers and synthetic participants in methodological experiments, aiming to test the feasibility and effectiveness of AI-assisted qualitative data collection.

This ongoing project continues to support student-led research and lays the groundwork for future applications in adaptive game design, behavior prediction, and cross-cultural recommendation systems.

【研究の成果(本研究によって得られた知見、成果、論文、学会発表、外部資金への応募見込み等)】

During this research period, five students successfully completed their undergraduate theses under my supervision, each exploring a unique topic aligned with the goals of the EVBR system:

1. Tetris Longevity and User Motivation (Puyo Puyo Tetris)

Investigated why Tetris remains a popular game across generations, with emphasis on user motivation and play intention. This project utilized the Nintendo Switch purchased with last year's funds and conducted remote interviews using Zoom (funded this year).

2. Emotional Impact on Performance in Valorant

Examined whether player anxiety and emotional states influenced gameplay results in FPS titles. Data collection included self-assessments and match recordings.

3. Pokémon GO and Exercise Motivation in Shimane

Explored whether Pokémon GO players in rural Japan were more inclined to engage in physical activity due to gameplay incentives and location-based features.

4. Using GPT-4 as an Interviewer in Tetris Motivation Research

Combined AI and the Means-End Chain method to qualitatively investigate player motivation, with GPT-4 conducting text-based interviews with real human players. GPT Plus subscription was funded through this project.

5. Synthetic Participants via GPT for Efficient Interview Simulation

Expanded upon the fourth project by using GPT-generated respondents to simulate interview responses, aiming to reduce labor costs while maintaining data diversity and authenticity.

In addition to supervising these projects, I began mentoring a new master's student working on a hybrid research topic involving gaming, recommendation systems, and algorithms. I also took on four new undergraduate students, all of whom are planning to work on game-related topics.

Currently, I am compiling the five completed projects into publishable manuscripts targeting international journals. This ongoing research has also opened opportunities to apply for external grants focused on AI applications in user modeling and serious games.