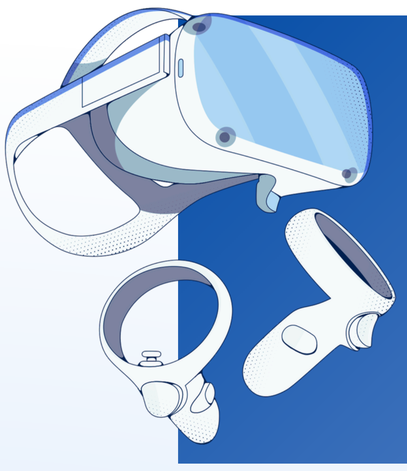

# Beat&Fit Adventure


**CPT208 Human-Centric Computing**

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## Abstract


"Beat&Fit Adventure" is an innovative fitness solution that leverages virtual reality technology and gamification to revolutionize traditional exercise experiences. In today's fast-paced society, maintaining fitness routines can be challenging due to factors such as monotony and personality. To address these issues, our project aimed to create an immersive fitness adventure game that integrates entertainment into exercise activity.

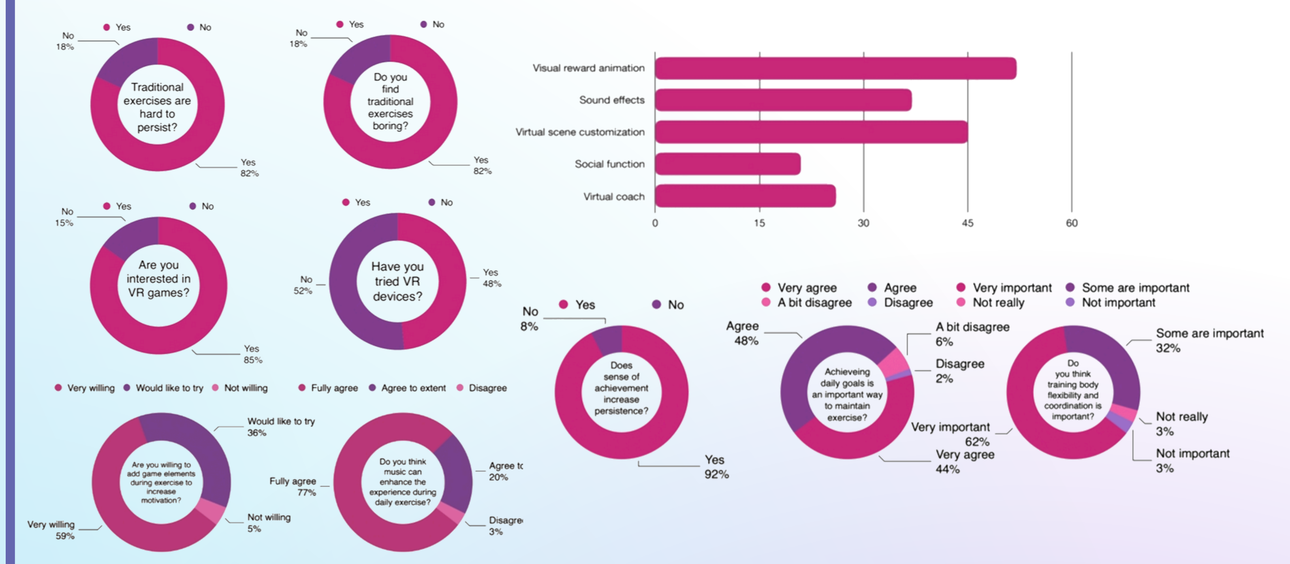
Through market research, questionnaire surveys, and experiments, we gathered insights into user preferences and requirements. Our findings highlighted the need for engaging fitness solutions that offer variety and enjoyment. We designed a series of prototypes, incorporating intuitive controller designs and dynamic gameplay scenes, customizable music options.

Evaluation of our prototypes revealed positive feedback from users, indicating high usability and ideal workload. Participants appreciated the immersive experience and expressed interest in further enhancements, such as virtual fitness coaches and personalized settings.

In conclusion, Beat&Fit Adventure is an innovation in the evolution of fitness gaming, offering users a fun and effective way to stay exercise enthusiasm. Future iterations will focus on refining the user experience and expanding features to cater to diverse fitness needs and preferences.


## Requirement

### Questionnaire




**Entertainment and Stimulation** Our game integrates stimulating visuals and dynamic sound effects to keep users engaged and motivated.

**Fitness Effectiveness** Emphasizes comprehensive body engagement and tailored intensity, focusing on coordination and flexibility as key factors.

**Consistency and Motivation** Features a daily target system to encourage regular exercise and support habit formation.

**Music and Rhythm** Incorporates music to enhance the workout experience, aligning with evidence of its positive impact on exercise enjoyment and effectiveness.

### User Persona

Liang is very thin and eager to strengthen his physique through exercises, but he is a complete novice, and don't have much self-discipline. But, he loves music and playing VR games at home.

## Methodology

Our development followed an iterative design process, combined with a comprehensive evaluation approach.

**Market Research** Analyzed target user needs to align product features with user expectations.

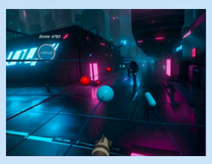
**First Prototype** Developed based on initial user feedback to establish core functionality.

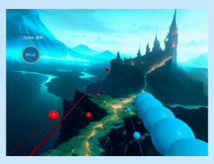
**Heuristic Evaluation**[3] Performed by experts to refine usability based on established principles.

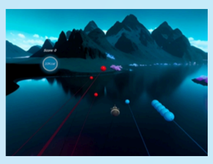
**Evaluation Tools** Applied SUS and NASA-TLX to measure usability and workload, guiding improvements.

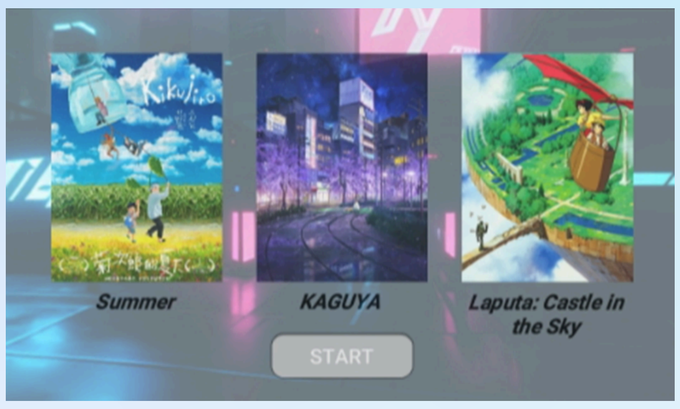
**Iteration of Design** Continuously refined the game using feedback to enhance user engagement and functionality.


### Game Scene



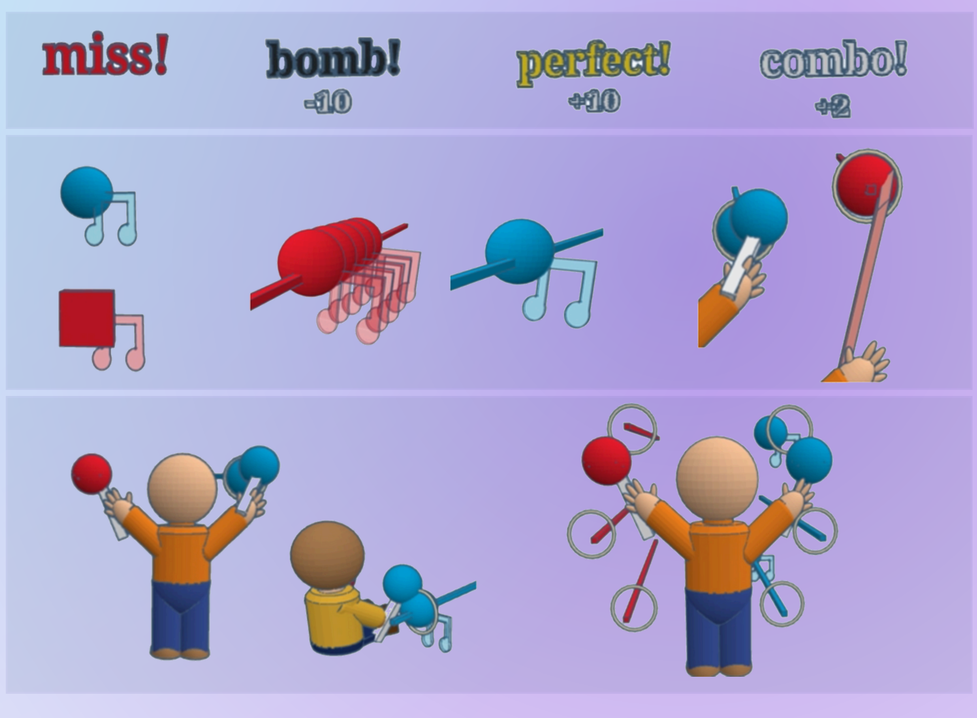









## Prototype

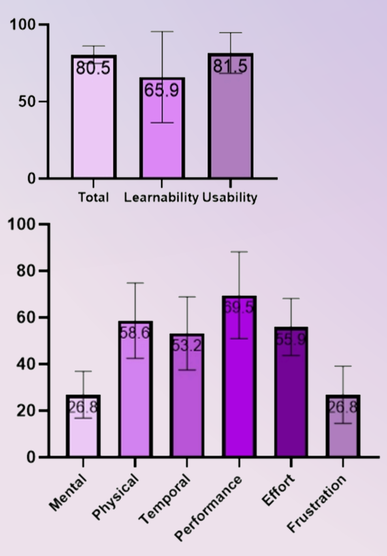



## Evaluation

**System Usability Scale (SUS)** [1] is a reliable tool for assessing the usability of a variety of products and services. It consists of a 10-item questionnaire that provides a quick, global view of subjective assessments of usability, using a Likert scale from 1 to 5 for responses. The SUS has been a widely adopted and validated tool for measuring the perceived ease of use of a system, application, or a VR fitness game in our scenario.

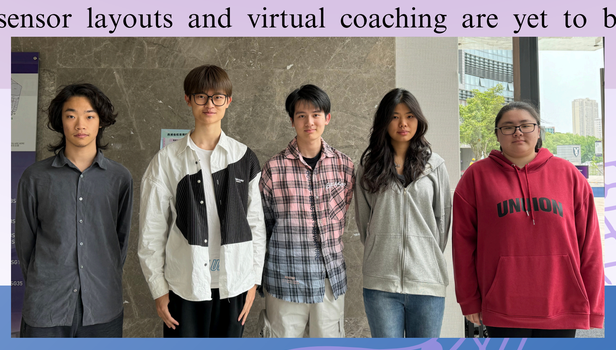
**NASA Task Load Index (NASA-TLX)** [2] is a widely used assessment tool that evaluates subjective workload to measure the efficiency of a task. It rates perceived workload in order to assess the interaction between the human and the task conditions. NASA-TLX involves six dimensions: mental demand, physical demand, temporal demand, performance, effort, and frustration level, each rated on a scale from 0 to 100.

**Interviews** in our evaluation process are semi-structured discussions that provide qualitative insights into user experiences, preferences, and challenges.




## Conclusion

Beat&Fit Adventure seamlessly combines rhythm game entertainment with exercise. It motivates users through an immersive experience featuring diverse backgrounds, multiple tracks, and daily challenges to encourage consistent workout habits. By incorporating scoring and ranking systems, users gain a sense of accomplishment, making sustained fitness easier. However, there is room for improvement, as features like personalized sensor layouts and virtual coaching are yet to be developed.




**Reference List：**

[1] Bangor, Aaron et al. "An Empirical Evaluation of the System Usability Scale." International Journal of Human–Computer Interaction 24 (2008): 574 - 594.

[2] Hart, S. G.. "Nasa-Task Load Index (NASA-TLX); 20 Years Later." Proceedings of the Human Factors and Ergonomics Society Annual Meeting 50 (2006): 904 - 908.

[3] Nielsen, J., & Molich, R. (1990). Heuristic evaluation of user interfaces. In Proceedings of the SIGCHI conference on Human factors in computing systems (pp. 249-256). ACM.