#ODDBALL

Phase 1 - Research and Goals

Client : Professor Patrick Fitzgerald, NC State Design

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Long Term Goal:

The long-term goal of the "Oddball" project under Professor Pat Fitzgerald's guidance is to revolutionise the landscape of visual matching games through the integration of generative AI technologies. The vision extends beyond simply creating a game that captivates users with its novelty; it aspires to cement "Oddball" as a frontrunner in the genre, known for its dynamic content and ability to adapt and evolve. By leveraging generative AI, the game will offer an inexhaustible stream of visual puzzles, ensuring that the content remains fresh and challenging.

Educational value is a cornerstone of the "Oddball" project's long-term goals. By curating content that spans various subjects. It aspires to be a tool for learning and cognitive development, making use of the inherent educational potential in visual matching and recognition tasks. Through subtle integration of trivia and facts related to the images in play, "Oddball" will stimulate curiosity and foster a love for learning among its players, making it a valuable resource for players of all ages.

The project is committed to continuously exploring the boundaries of what's possible with generative AI and game design. This forward-thinking approach will be key to achieving the ambitious goal of establishing "Oddball" as a game in the visual matching genre, setting new standards for what games can achieve in terms of educational value, player engagement, and technological innovation.

List of Challenges/Obstacles:

1. How can we ensure the AI-generated visuals are diverse and engaging for all user demographics?
2. What strategies can we employ to balance the game's difficulty, ensuring it is accessible to beginners while still challenging for advanced players?
3. How might we design the slow-reveal mechanic to be intuitive yet suspenseful?
4. In what ways can we prevent generative AI from producing inappropriate or irrelevant content?
5. What measures should we take to ensure the game remains fun and engaging over multiple play sessions?
6. What measures can we put in place to maintain a balance between educational value and entertainment to ensure that the game doesn't become too didactic, potentially deterring players looking for a casual gaming experience?
7. How does the interactive design of the game affect the extent of engagement, amusement and learnability of the game?

Experience Map:
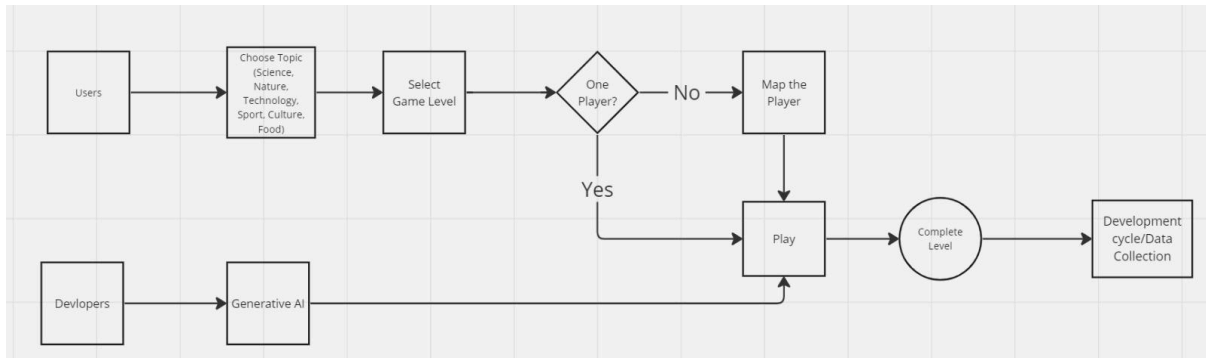
Users will first select the topic and context they wish to engage within the game. Following this, they will have the opportunity to adjust the difficulty level to their preference. Subsequently, users can decide whether to embark on the gaming experience solo or opt for an online multiplayer mode. If they opt for the latter, they can either select a specific player to join or have one automatically assigned at random. Upon completion of the game level, players will contribute to the collection of game logs and data, which will be analysed and utilised to enhance future development.

Talk With Experts:

The meeting involved our team, Professor Patrick Fitzgerald, and Professor Ben Watson discussing the development of a new game called "Oddball." This game is inspired by a previous project supported by an NSF grant and aims to be both fun and educational. It challenges players to identify the odd one out among a group of images displayed on their phones, enhancing visual recall and comparison skills. The game could cover various topics, from celebrities to medical sciences, making it a versatile tool for learning through visual recognition.

Professors Fitzgerald and Watson shared insights on the game's design process, emphasising creativity and the exploration of human visual perception. They suggested that the game could incorporate educational elements in a fun way, potentially becoming a casual game for both entertainment and learning. The discussion also touched on the importance of understanding visual psychology and the Gestalt principles, which could influence the game's development. The team was encouraged to brainstorm freely without immediate reliance on existing models to foster original ideas.

The professors also introduced concepts like "comfort with ambiguity" in the creative process, suggesting a phased approach to idea development, starting with individual brainstorming and gradually refining ideas through collaboration and research. This method aims to maximise creative potential before settling on a final concept. The importance of considering psychological principles in design was also discussed, setting the stage for a project that blends fun with cognitive engagement.

Problems/Opportunities:

- Educational Integration:
  - ➢ How might we seamlessly integrate educational content into Oddball without compromising the fun and casual nature of the gameplay?
  - ➢ How might we track and provide feedback on the player's learning progress?
  - ➢ **How might we integrate adaptive learning algorithms to tailor the educational content based on the user's performance and learning pace?**
- User Experience:
  - ➢ **How might we design the user interface to be intuitive and accessible for all age groups and abilities?**
  - ➢ How might we gather and incorporate player feedback continuously to enhance the user experience and address any usability issues promptly?
- Content Moderation:
  - ➢ How might we ensure that all AI-generated content is appropriate for the game's intended audience?
  - ➢ **How might we keep the game content fresh and exciting with regular updates?**
- Monetization and Sustainability:
  - ➢ How might we develop a monetization strategy that supports the game's longevity without detracting from the user experience?
  - ➢ **How might we leverage community engagement to contribute to content creation and validation?**

Target User Problem:
Users, ranging from novices to experienced players, face a challenge in engaging with a slow-reveal matching game that caters to both accessibility and scalability. The current slow-reveal mechanic lacks adaptability and may not effectively provide a captivating experience for a diverse user base.

Parameters for Difficulty Adjustment:

The existing slow-reveal mechanic could be enhanced by leveraging generative AI to adjust various parameters, introducing adaptable challenges. However, the challenge lies in creating a system that not only caters to a broad audience but also maintains a delicate balance between accessibility and scalability. The following parameters are considered for difficulty adjustment:

1. **Brightness**: The image's brightness can be manipulated to hinder recognition, posing a challenge for players.

2. **Colour**: Introduce complex colour patterns that challenge users to identify the matching elements within the image.

3. **Scaling**: Modify the size of the image to provide scalable challenges, ensuring suitability for both beginners and advanced players.

4. **Speed/Blurring**: Incorporate dynamic elements like image blurring or rapid appearance and disappearance to test users' visual acuity and memory retention.

5. **Memory**: Exploit memory principles such as primacy, recency, and repetition to create challenges that are not easily memorizable, ensuring sustained engagement.

6. **Gestalt Principles**: Apply Gestalt principles to manipulate visual elements, leveraging figure-ground, similarity, proximity, common region, continuity, closure, and focal points to add complexity and diversity to the challenges.

User Problem Statement:

Players encounter a lack of adaptability and scalability in the current slow-reveal matching game, leading to a suboptimal gaming experience for both newcomers and seasoned players. The absence of a nuanced difficulty adjustment mechanism limits the game's appeal, hindering user engagement. Additionally, the current design overlooks the potential of generative AI to leverage parameters like brightness, colour, scaling, speed, and memory, as well as the gestalt principles, to create a more captivating and diverse gaming experience. Addressing these issues is crucial to ensure that the slow-reveal mechanic is both accessible for new players and provides a scalable challenge for those seeking a more advanced and engaging gaming experience.