

Case 1 - Genshin Impact : Wondrous Shadows

Education and Entertainment

Overview

- In-game event in Genshin Impact for ages 12+ (excluding those with mental disorders)
- Accessible on multiple platforms (PC, tablets, and PS4)
- Light-and-shadow visual dislocation and projection techniques
- Puzzles with varying Shadow Lantern models



Led by: Yang Gu

Participants: Hongbin Zhang, Haojun Shen, Yiming Li, Xiang Xie, Anonymous participant

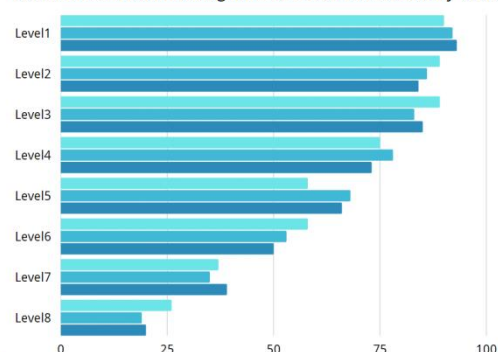
Heuristic Evaluation Results

- Prevent Errors (Shneiderman, 1992): Provide clearer feedback upon rotation errors
- Reduce Short-term Memory Load (Shneiderman, 1992) : Display concise, on-screen instructions
- User Control and Freedom (Nielsen, 1994) : Add an 'undo' button for unwanted rotations
- Error Prevention (Nielsen, 1994) : Implement a confirmation page before exiting

Observations & Findings

- Distribution of issues: Mostly minor and general issues, few serious issues
- Motivation rankings: Decline as level index increases, significant drop in final levels
- Avoid abrupt increase in difficulty (Klahr.D. & Nigam.M, 2004)
- Novel light and shadow decryption design worth learning from for similar products

Extent of motivation throughout the 8 levels evaluated by users



CPT208 - B4

References

- Gotsman, T., Polydorou, N., & Edalat, A. (2021). Valence/Arousal Estimation of Occluded Faces from VR Headsets. 2021 IEEE Third International Conference on Cognitive Machine Intelligence (CogMI), 96-105. <https://doi.org/10.1109/CogMI52975.2021.00021>
- Schneiderman, B. (1992). Designing the User Interface: Strategies for Effective Human-Computer Interaction (2nd ed.). Addison-Wesley.
- Nielsen, J. (1994). Heuristic Evaluation. In J. Nielsen & R. L. Mack (Eds.), Usability Inspection Methods. John Wiley & Sons.



Case 2 - A Fisherman's Tale

Education and Entertainment

Overview

- VR puzzle adventure game for all ages
- Head-mounted devices (PlayStation VR, HTC Vive, Oculus Rift, Windows Mixed Reality)
- Immersive storytelling, intuitive controls, and creative challenges



Led by: Hongbin Zhang

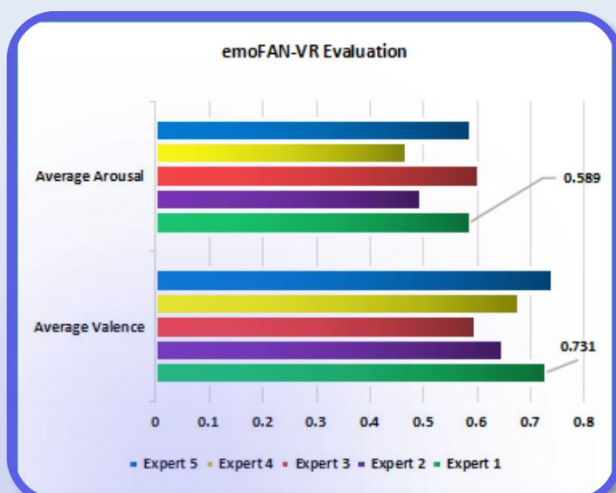
Participants: Yang Gu, Haojun Shen, Yiming Li, Xiang Xie, Anonymous participant

Heuristic Evaluation Results

- Consistency and standards (Nielsen, 1994): Ensure consistent interactions, control schemes, and visual language
- User control and freedom (Nielsen, 1994): Implement robust "undo" feature and clear exit points
- Visibility of system status (Nielsen, 1994): Provide clear visual and auditory feedback
- Enable frequent users to use shortcuts (Shneiderman, 1992): Introduce gesture-based shortcuts for experienced players

Observations & Findings

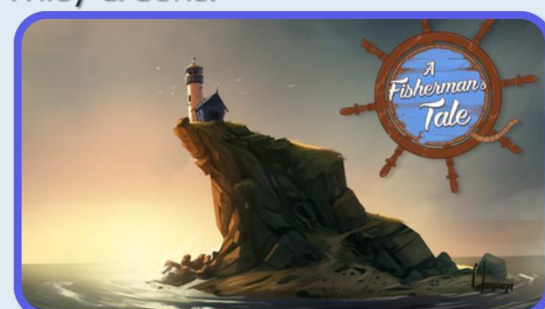
- Positive Valence and high Arousal (Gotsman et al., 2021): Satisfactory immersive scene construction
- Smaller number of serious issues: Primarily related to gameplay and level design
- Affirmed by testers: User immersion, scenario design, and puzzle design



CPT208 - B4

References

- Gotsman, T., Polydorou, N., & Edalat, A. (2021). Valence/Arousal Estimation of Occluded Faces from VR Headsets. 2021 IEEE Third International Conference on Cognitive Machine Intelligence (CogMI), 96-105. <https://doi.org/10.1109/CogMI52975.2021.00021>
- Schneiderman, B. (1992). Designing the User Interface: Strategies for Effective Human-Computer Interaction (2nd ed.). Addison-Wesley.
- Nielsen, J. (1994). Heuristic Evaluation. In J. Nielsen & R. L. Mack (Eds.), Usability Inspection Methods. John Wiley & Sons.

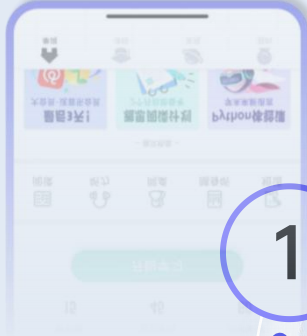


Case 3- Scallop

Education and Entertainment

Overview

- Language learning app for iOS and Android devices
- Personalized vocabulary lists, flashcards, quizzes, and progress tracking
- Social interaction and sharing features
- Navigation and organization tools for lessons and vocabulary lists



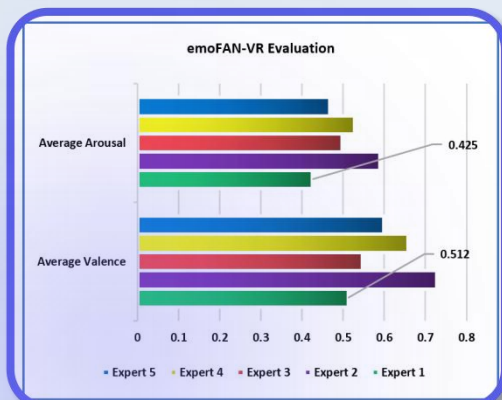
Led by: Xiang Xie
Participants:
Hongbin Zhang,
Yang Gu,
Haojun Shen,
Yiming Li,
Anonymous participant

Heuristic Evaluation Results

- Design dialogs to yield closure (Shneiderman, 1992): Ensure clear closure and next action indication
- Prevent errors (Shneiderman, 1992): Implement robust error prevention, confirm deletion, and provide warnings
- User control and freedom (Nielsen, 1994): Offer more customization options and settings
- Permit easy reversal of actions (Shneiderman, 1992): Allow users to easily undo or reverse actions

Observations & Findings

- Boredom and fatigue due to repetitive nature of memory exercises
- Facial expressions analyzed using EmoFAN-VR neural network model (Gotsman et al., 2021)
- Majority of issues are serious and minor, smaller number of general issues
- Insufficiently positive Valence and relatively high Arousal indicate user satisfaction



1

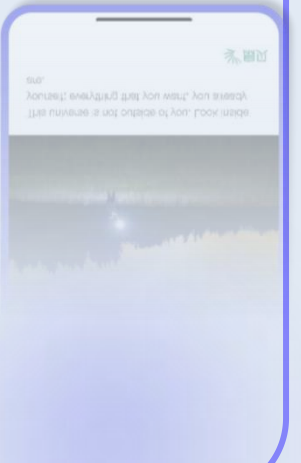
2

4

3

References

- Gotsman, T., Polydorou, N., & Edalat, A. (2021). Valence/Arousal Estimation of Occluded Faces from VR Headsets. 2021 IEEE Third International Conference on Cognitive Machine Intelligence (CogMI), 96-105. <https://doi.org/10.1109/CogMI52975.2021.00021>
- Schneiderman, B. (1992). Designing the User Interface: Strategies for Effective Human-Computer Interaction (2nd ed.). Addison-Wesley.
- Nielsen, J. (1994). Heuristic Evaluation. In J. Nielsen & R. L. Mack (Eds.), Usability Inspection Methods. John Wiley & Sons.



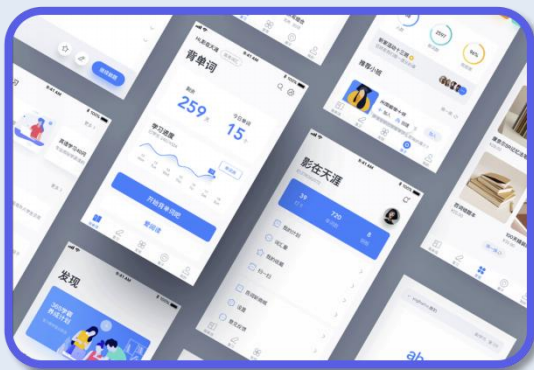
CPT208 - B4

Case 4- Bai Ci Zhan

Education and Entertainment

Overview

- English vocabulary learning app for iOS and Android devices
- Utilizes Ebbinghaus Forgetting Curve principle for learning plans
- Enhances memory performance with pictures, pronunciation, and example sentences
- Suitable for various settings: classrooms, families, and individual learning



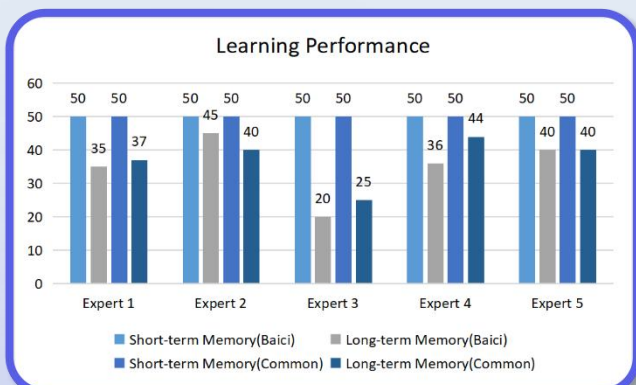
Led by: Haojun Shen
Participants:
Hongbin Zhang,
Yang Gu,
Xiang Xie,
Yiming Li,
Anonymous participant

Heuristic Evaluation Results

- Consistency and standards (Nielsen, 1994): Ensure consistent interactions, control schemes, and visual language
- Flexibility and Efficiency (Nielsen, 1994): Provide learning content at various difficulty levels and shortcuts for experienced users
- User control and freedom (Shneiderman, 1992): Offer clear undo and redo actions for error correction
- Help Users Recognize, Diagnose, and Recover from Errors (Shneiderman, 1992): Provide clear, friendly error messages and guidance on problem solving

Observations & Findings

- Image memory method improves impression of words but may not improve word retention, especially spelling
- Significantly fewer serious issues, mostly related to User Interface and Multi-Platform Support
- Long-term memory performance lower than other commonly used software (Cowan, 2019)



References

- Cowan, N. (2019). Short-term memory based on activated long-term memory: A review in response to Norris (2017). *Psychological Bulletin*, 145(8), 822-847.
- Nielsen, J. (1994). *Heuristic Evaluation*. In J. Nielsen & R. L. Mack (Eds.), *Usability Inspection Methods*. John Wiley & Sons.
- Schneiderman, B. (1992). *Designing the User Interface: Strategies for Effective Human-Computer Interaction* (2nd ed.). Addison-Wesley.

CPT208 - B4



Case 5 - Monument Valley

Education and Entertainment

Overview

- Critically acclaimed puzzle game for Android and iOS devices
- Enhances problem-solving skills and spatial reasoning
- Ideal for on-the-go gaming with short, completable levels
- Manipulates impossible architecture and optical illusions



Led by: Yiming Li

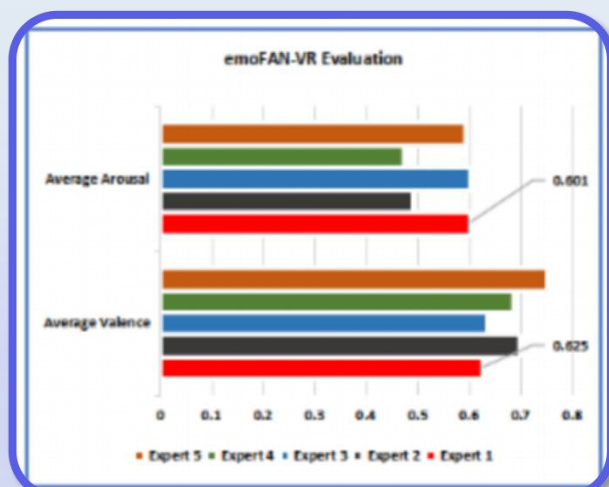
Participants: Yang Gu,
Haojun Shen,
Hongbin Zhang,
Xiang Xie,
Anonymous participant

Heuristic Evaluation Results

- Error prevention (Nielsen, 1994): Provide clear feedback and make common errors more difficult to appear
- Help and documentation (Nielsen, 1994): Offer instructions, guidance, and a help section with detailed information
- Match between system and the real world (Nielsen, 1994): Use familiar and intuitive design patterns to match the user's mental model
- Reduce short-term memory load (Shneiderman, 1992): Simplify game mechanics, provide visual aids, and use incremental learning

Observations & Findings

- Significant challenge to spatial imagination, with extended periods on certain levels without assistance
- Predominantly positive emotional valence and high average arousal during gameplay (Gotsman et al., 2021)
- Consider matching game decryption with the real world to improve user experience



CPT208 - B4

References

- Gotsman, T., Polydorou, N., & Edalat, A. (2021). Valence/Arousal Estimation of Occluded Faces from VR Headsets. 2021 IEEE Third International Conference on Cognitive Machine Intelligence (CogMI), 96-105. <https://doi.org/10.1109/CogMI52975.2021.00021>
- Nielsen, J. (1994). Heuristic Evaluation. In J. Nielsen & R. L. Mack (Eds.), Usability Inspection Methods. John Wiley & Sons.
- Schneiderman, B. (1992). Designing the User Interface: Strategies for Effective Human-Computer Interaction (2nd ed.). Addison-Wesley.

