Overview of UX Trends in Game Development and VR/AR

CGT 17208, Exercise 1

Section 13238-001

1/26/25

Team 3

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Table of Contents

Introduction

Our team consists of three Game Development majors and one UX Design major. This exercise aimed to identify and analyze the trends of User Experience Design within the field of Game Development and Virtual Reality. Our team members crossed paths in our interest in creating immersive and fun experiences for others; whether it's through video games or virtual reality experiences, our team hopes to incorporate UX design principles into our future work.

In this exercise, we performed three tasks to reach our goal. Our first task was to identify the field and role each team member wants to pursue in the future. Each team member chose one "dream job" to conduct their research on. These job listings would lead us to our next task: organizing and comparing the required skills for our roles. We used techniques to identify categories of common skills and recognized unique skills. The third task was to individually complete research on any trends or practices of user experience design in our specific fields. Having completed all of our tasks, we came together to synthesize all information and research to make conclusions about the presence of UX in our general field.

Job Search

Team Member: Chawin Mingsuwan
Job Title: NASA Virtual Reality Software and Simulation Engineer
Company: CACI (NASA Contractor)

Description: We are growing the team that will take astronauts back to the Moon and onto Mars and are looking for an experienced engineer or computer scientist with a background in Virtual Reality, simulations, and math modeling. This highly regarded team supporting NASA will support our efforts to continue developing software technology to model and simulate the space environment and complex space systems for astronaut training, extra-vehicular activity (EVA) planning and review, and future human exploration vehicle design.

Link: NASA Virtual Reality Software and Simulation Engineer in Houston, Texas, United States of America | Engineering at CACI

Summary: The job is under CACI but works with NASA as a contractor and it is located in Houston, Texas. This job requires a vast knowledge of virtual reality, and programming, and several years of work experience, depending on whether you have a bachelor's or a master's. Additionally, along with the job, soft skills are essential, adaptability, independence, a hard work ethic, and project management. As well as having coursework or experience in space vehicle systems and operation, and human-computer interaction system design is a bonus. The position is under CACI but works under NASA's project to support the software development for virtual reality and simulations in NASA astronaut training and extra-vehicular activity.

Team Member: Ryan Corey
Job Title: Game Producer
Company: Epic Games

Description: "We are looking for a game producer to join our Rocket League team. In this position you'll partner with development leads to drive processes, deliver results, and unblock your team to do their best work. Ideal candidates excel in organization, have exceptional social skills, and are experts at managing schedules of complex projects. If you're passionate about Rocket League and excited about working with cutting-edge technology, we want to hear from you!"

Link: https://www.epicgames.com/site/en-US/careers/jobs/5378635004

Summary: This job at Epic Games puts you in the development of Rocket League to increase the quality of life within the game. You will be required to do tasks such as facilitating development operations, being the center of communication, and building and facilitating the schedule. In this role, you will be required to be a team player and communicate with others to stay on track with the game's schedule. You will grow many skills in this area of production which can be used in future professions.

Team Member: Ashton Sun
Job Title: Product Design Manager - Metaverse
Company: Meta

Description: Experienced, hands-on product design leader with people management skills and strong technical expertise. The ideal candidate is an experienced product design leader who flourishes working in an ambiguous technology space at the front end of VR & MR products and tools. This position will allow you to explore multiple facets of supporting VR & MR prototypes, interfaces, inputs, and tools.

Link: https://www.metacareers.com/jobs/2199616583771966/

Summary: Six years ago, I unwrapped a Google Cardboard kit for Christmas, planting the seed for my fascination with augmented and virtual reality. Ever since then, I have been eagerly keeping up with new developments in the field. The most important aspect of virtual reality is maintaining an immersive and easy user experience. This led me to choose the product design manager position at Meta as my “dream job” for this exercise. The job requires a lot of skills and experience but is reasonable for such a high position at a company that is leading the charge in the field.

Team Member: Alex Kim
Job Title: Senior Game Designer
Company: Riot Games

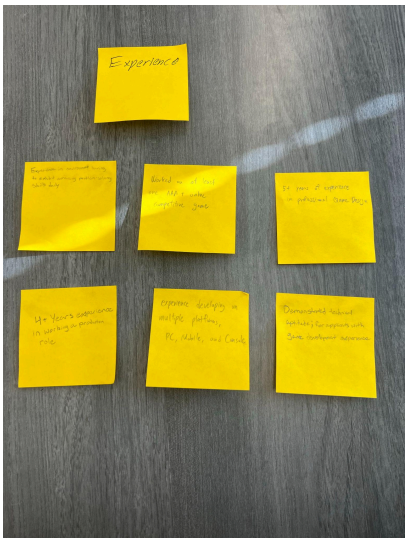
Description: “As a Senior Game Designer, you will design, tweak, and optimize the player experience. Your analytical skills, player insight, and creativity aid in crafting in- and out-of-game experiences that engage and surprise players. You will collaborate with interdisciplinary teams and work with every tool at hand to innovate and iterate player-focused designs that'll delight millions around the world”

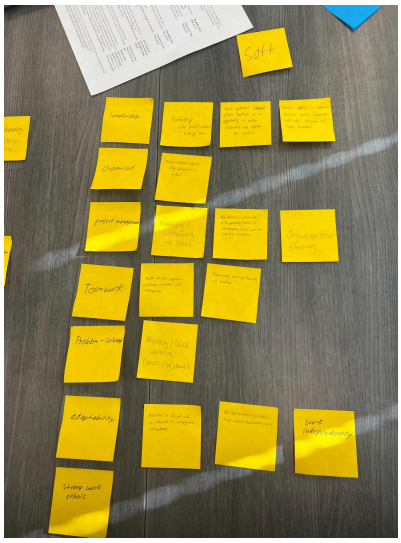
Link: Game Designer III - VALORANT, Competitive Systems | Riot Games

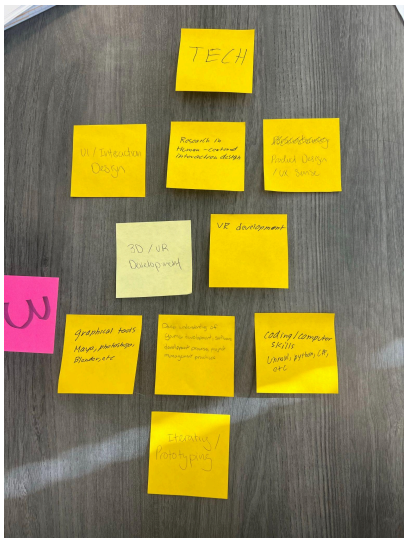
Summary: Riot Games is hiring a Senior Game Designer for VALORANT's Competitive Systems team in Los Angeles. The role requires 5+ years of game design experience, expertise in competitive systems, and a passion for online shooters. The role focuses on improving matchmaking, ranked systems, and overall player engagement in the tactical shooter. Designers are expected to collaborate with teams, Product Managers, and Design Leadership. They are also expected to analyze player data and innovate on competitive systems to enhance fairness and engagement.

Skill Cross-Examination

We used **affinity diagramming** to collaborate and lay out our required professions from each of our job listings to see what was similar/different between all of us. When looking at all the notes found on the table, we saw ones with the same wording, we then worked between them all and grouped them. We finalized by seeing if things could go elsewhere or stay in the same spot.







Here is a table that lists the skills and their categories. Some of the findings were similar to each other so to save space, they were conjoined together and are marked in bold.

Experience	Soft	Technical
The role required of having problem-solving skills	Leadership	**UI/Interaction Design**
More than 4-5 years of experience in the game industry	Organization	Product Design
Multi-platform Experienced	**Project Management**	**VR Development**
	Teamwork	Graphical Tools
	Project Management	Coding/Computer Skills
	Adaptability	Prototyping

Through our findings, we noticed certain trends between what is needed for UX Design and Game Development, such as skills that involve **leadership** and required skills for both graphical and computer skills. Both sides strongly require **management** skills, **technological** skills, and **design** skills.

Secondary Research

Team Member: Chawin Mingsuwan

Article 1: User Experience on Game Development Trends
Link:
https://www.proquest.com/docview/2568052331?pq-origsite=primo&sourcetype=Scholarly%20Journals
Article 2: UX in AR-Supported Industrial Human-Robot Collaborative Tasks: A Systematic Review
Link:
https://www.proquest.com/docview/2624249458?pq-origsite=primo&sourcetype=Scholarly%20Journals
Summary: Game development is a strong industry that is increasing every year and within that field, there is a trend in UX and application of UX with VR/AR. In the board game development field, UX is focused on **usability** and emerging technologies like virtual reality (VR) (Persada, 2019). The article explains how user testing and user-centered design principles can enhance the gaming experience by understanding the cognitive perspective. Additionally, there are applications to use virtual reality to make the gaming experience immersive and give players more interactive experiences (Persada, 2019). In the field of virtual environments, there is a discussion about using human-centered design with augmented reality (AR) to support **human-machine collaboration** with a focus on **user comfort and safety** (Riccardo et al., 2021). Since AR is mainly developed with a focus on a technical perspective a UX-driven framework is proposed to design AR interfaces and address the cognitive aspects within AR and VR. Both articles call for more future research in integrating UX methodologies in game development and AR to understand their targeted audience's needs and develop a fully structured project that combines the technical and user perspectives.

Team Member: Ryan Corey

Article 1: Game UX Design - Why is UX important in 3D video game development
Link: https://www.juegostudio.com/blog/ux-design-in-3d-video-game-development
Article 2: UX Trends in the Gaming Industry, 2023
Link:https://medium.com/my-games-company/ux-trends-in-the-gaming-industry-2023-7133fc9cb034
Summary: With the video game industry changing every year with each created game, companies work hard to provide a **simple and understandable user experience**. A recent trend in UX in game development, companies have begun to focus on many sub-groups to improve the experience. For instance, in recent years game companies have focused more on **accessibility**

working to ease the player's use and make it more enjoyable while trying to reduce frustration, these **quality-of-life** changes have come in the form of customizable controls, visual aids, and audio cues making a more inclusive experience. **AI** is now being used not just to help develop games, but within the games itself. The AI adapts to the player's moves, adapting every play by providing a more personalized experience. They have also started changing things within the UI to provide players with a more simplified and frustration-free user experience not just for the basic computer screens but for the various screen sizes and platforms. Now more than ever the gaming industry has started to develop an experience that is beneficial to all the players and create adaptive, fun experiences for all.

Team Member: Ashton Sun

Article 1: Usability Heuristics for Metaverse
Link:
https://www.proquest.com/docview/3110441085/fulltext/7DF4065DF024EC6PQ/1?accountid=13360&sourcetype=Scholarly%20Journals
Article 2: Investigating User Experience of an Immersive Virtual Reality Simulation Based on a Gesture-Based User Interface
Link:
https://www.proquest.com/docview/3067399932?pq-origsite=primo&accountid=13360&sourcetype=Scholarly%20Journals
Summary: User experience and human-computer interaction lay the foundation for creating experiences within virtual reality. To create immersive experiences, the user experience of interacting with a virtual reality headset must feel almost seamless with interaction in real life. Recent research in virtual reality user experience reveals a significant shift towards more natural and intuitive interaction methods like **gesture-based controls**, particularly in the context of the metaverse (Khalil, 2024). User immersion depends on many factors such as natural hand movement, emotional engagement, content design elements, aesthetics, display quality, and tracking accuracy. Some challenges with current technology and experiences within the field include a **lack of tactile feedback** and accuracy of tracking/controls (Laine, 2024). Successful VR experiences require careful attention and balance to both **static elements** like display quality and **dynamic factors** such as user interaction and feedback systems. As the goal of virtual reality is to simulate reality, UX designers must come up with techniques to deal with the restrictions and quirks of being in a virtual space to ensure engagement, accessibility, and immersion.

Team Member: Alex Kim

Article 1: How User Experience Design Is Used In The Game Industry
Link: https://hub.fullsail.edu/articles/how-user-experience-design-is-used-in-the-game-industry
Article 2: Play Is The Point: How UX Designers Can Break Into The Gaming Industry
Link:
https://uxmag.com/articles/play-is-the-point-how-ux-designers-can-break-into-the-gaming-industry
Summary: UX design is becoming increasingly crucial in the gaming industry, and understanding its role offers a path for designers. In the gaming world, UX design is about making games **usable** and enhancing player **engagement** and **emotional connection**. One of the first challenges is understanding how users interact with game interfaces and navigating the game mechanics. Designers must focus on the **player's journey**—considering their goals, frustrations, and motivations—much like in UX fields but with the complexity of creating an immersive experience. Moreover, **usability testing**, constant **iteration**, and working closely with developers are important for creating engaging game environments. As the gaming industry grows, there is an increasing demand for UX designers who can consider how players experience and connect with games, ensuring that accessibility, flow, and emotional engagement are integrated into gameplay.

Research Summary

The following research has been conducted to understand the critical role of user experience (UX) in the game development and virtual and augmented reality (VR/AR) industries. By synthesizing the job skills and secondary research, this summary highlights emerging UX trends and their applications, providing actionable insight into these industries.

The Key UX trends are identified as follows:

- Game development
    - Balancing difficulty and accessibility
    - AI-Driven Personalization
    - Simplified User Interface (UI)
- VR/AR
    - Human-centered design
    - Enhancing Immersion
    - Industrial Applications

UX Trends in the Game Development Industry

In the game development industry, a key component of a well-balanced game that incorporates difficulty and enjoyment is **balancing difficulty and accessibility**. Games are designed to avoid extremes in difficulty to enhance payer satisfaction (Persada, 2019; Juego Studio, 2023). Additionally, features like **customizable controls**, visual aids, and audio cues are designed to improve accessibility and inclusivity. These features are implemented to allow more individuals to have access to video games and balance the difficulty.

Another feature in the game development industry is **AI-driven personalization**. With the help of AI, designers can gather data on what individuals find fun in a game. Additionally, artificial intelligence adapts gameplay to user behavior, creating tailored and engaging experiences (Medium, 2023). The evolution of AI ensures that individuals have customized experiences to balance out difficulty and enjoyability to keep the individual within the game. This continues to ensure that the game has a strong player base.

Along with AI, there is research done for **simplified user interfaces** (UI). A way to guide the players (users) in a game is through the UI. There has been a focus on creating frustration-free, intuitive UIs that adapt to various platforms (Juego Studio, 2023). This gives the players an easy feeling to guide themselves and enhance enjoyability within the game. If the player feels that they can easily navigate within the game, this strengthens the connection between the players and the developers.

UX Trends in VR/AR

There is an increased need for human-centered design research in VR/AR. Most hardware and software are made by technologists and engineers, but this neglects the cognitive side of VR/AR. Currently, there is an emphasis on **seamless interaction** and natural **gestures** for VR/AR interfaces, mimicking real-life experiences (Khalil, 2024; Laine, 2024). An increase in human-centered design allows for the development of stronger real-life experiences and an understanding of the cognitive load on the user.

Along with human-centered design, there are further studies in enhancing **immersion**. User-experience improvements target emotional engagement and user comfort by addressing factors like display quality and tracking accuracy (Riccardo et al., 2021). An increase in enhancing immersion allows UX designers to understand the user's need for emotional engagement and to enhance user comfort. The data allows them to work with technologists and engineers to refine their VR/AR equipment for better testing.

With the increase in VR/AR, there is a demand for **industrial applications**. VR/AR tools are increasingly used in industries for training, modeling, and collaboration, demanding UX refinement (Riccardo et al., 2021). User experience is needed to ensure that the customers can use the VR/AR tools as they are developed. Additionally, the designers will need to work with the technologists and engineers to understand what the customers need and to integrate the cognitive and technical side within VR/AR.

UX Commonalities with Game Development and VR

- Integration of Emerging Technologies
    - VR/AR enhances both gaming immersion and industrial efficiency
    - An increased need for advancements in hardware and UX methodologies integration
- Focus on Accessibility
    - Shared emphasis on designing for diverse audiences, ensuring usability for individuals with different needs
- Collaboration and Interdisciplinary Approaches
    - Both fields require teamwork with designers, engineers, and technologists to create user-friendly, innovative solutions.
- Soft Skills
    - Leadership and teamwork

    - Adaptability to evolving technologies and methodologies
- Technical skills
    - Proficiency in interaction design and prototyping
    - Knowledge of graphical tools, coding, and VR/AR development
    - Understanding human-centered fundamentals

Future Implications

These fields are growing exponentially and the future applications are as follows:

- Game Development
    - AI capabilities and streamlined UIs push for user satisfaction
- VR/AR
    - Increased focus on user comfort and intuitive interfaces to expand applications in gaming and industrial contexts

Individual Reflections

Team Member: Chawin Mingsuwan

Reflection: This exercise has been very thought-provoking and has prepared me to understand what I want to do in the future and to work on teamwork skills. Throughout the class, every activity emphasizes individual work followed by collaborative teamwork. There was a sketching activity and in the beginning, it was about warming up and understanding the fundamentals of sketching and how designers use sketches to draft base ideas. Then my group came together and we worked on exercises, each taking turns drawing on the whiteboard and seeing how fast we could get our idea down on paper and communicate that idea. Essentially, throughout last week, teamwork and communication have been central themes in class and in the research for exercise 1, which reflects the real world. After graduation, every job relies on teamwork and my ability to communicate with my team can dictate success or failure. This is important because effective teamwork requires clear communication, which is essential for a team's success. This made me realize that I need to ensure that I practice active communication and actively support my team, as this is a skill I will need in the professional world after graduation. Additionally, in the gaming industry and VR/AR industries, technologists and human-centered interaction designers must collaborate to fully address problems and develop well-rounded solutions. I hope to take the skills and ideas developed from this class from sketching my ideas down and iterating them until I get to the right conclusion and ensuring that I am a key team player and will help lead to the team's success.

Team Member: Ryan Corey

Reflection: When researching for dream jobs in the field of game development it required me to actively think about the types of skills required for that job. Doing research made me realize how important it was to already have those skills required for the job as it makes me want to do better and in small activities like this get used to communicating and working within a team promoting problem-solving skills, team management skills, and communication. This exercise engaged me to think like that and made me want to do my best on my part. Being in a team having similar interests in career allowed me to understand their perspectives and how they go about their interests.

Team Member: Ashton Sun

Reflection: It has been an extremely long time since I have asked myself the question of what dream job I wanted to pursue; if you had asked me ten years ago, I would've probably said that it was to be an astronaut. I have changed in many ways in the past decade, but I believe that I have always been an ambitious person. This exercise was unique and engaging to me in that I was

truly researching fields that I am interested in. Along with the opportunity to work with a team of like-minded individuals, I thought that this exercise was an exciting introduction to my first major-specific class. I believe that I have not only learned but also changed my mind in many aspects. Previously, I had thought that my dream job would be heavily influenced by technical skills; although still true, I had underestimated the value of soft skills such as communication, teamwork, and leadership. Working in a group for this exercise strengthened this realization; communicating with each other, listening to new perspectives, and managing our time were extremely important factors to the team's success. The desk studies taught me more about my specific interests and field, leading me to reflect on what steps I can take to move closer to my dream job. Overall, I had fun in this exercise working with my group and researching individually. I gained insight into what I want to do in the future, what skills to improve on, and how to work in a team.

Team Member: Alex Kim

Reflection: Collaborating with my teammates allowed me to better understand the importance of effective communication and teamwork. Each member brought unique perspectives and skills, which enriched the final output. Also, while working with teammates, I realized how essential it is to approach design from a user-centered perspective, balancing technical feasibility with user needs. Overall, the exercise enhanced my understanding of UX in gaming and related fields and strengthened my teamwork and problem-solving skills.

Team Contributions

Team Member: Chawin Mingsuwan

Contribution: Chawin's contributions are as outlined: he did his research for a dream job and outlined the important skills that are needed, being ready to contribute to a group discussion about common skills across all jobs/fields. Additionally, he conducted secondary research by looking for credible articles from the Purdue Library that have already been peer-reviewed, ensuring the articles contain accurate information that is ready to be shared with the team and provide meaningful content about UX trends in game development and VR/AR. Along with the group discussion, he synthesizes the information in the "summary research," outlining the key information from the job search and the secondary research.

Team Member: Ryan Corey

Contribution: Ryan's contributions are his research to his dream job and secondary research when exploring the connection to UX within the Game Development field. Finding peer-reviewed articles that assisted his findings of information to use in the final product. He is also credited with doing the Skill-Cross creating the table by including the similar skills found equally between the 4 total group members.

Team Member: Ashton Sun

Contribution: Ashton's contributions include individual research into a "dream job" and preparation for group discussion in the team's skill cross-examination. He conducted secondary research through peer-reviewed articles found in the Purdue Library, summarizing his findings about the role of user experience design in the virtual reality field. In the documentation, he is credited for his findings, Table of Contents, and Introduction. He contributed to the overall styling and consistency of the document.

Team Member: Alex Kim

Contribution: Alex's contributions are his research for a dream job and secondary research to explore the role and trend of UX design in the gaming industry, which provided critical insights into current trends and practices. This research was important as most team members are Game Development majors, and it helped bridge the gap between Game Design and UX Design. Also, the research helped us to understand the importance of a user-centered approach, shaping the direction of the design in a way that prioritized the user experience.

References

Cude, B. (2022, April 25). *How User Experience Design Is Used in the Game Industry*. The Hub. https://hub.fullsail.edu/articles/how-user-experience-design-is-used-in-the-game-industry

Khalil, Omar, Hussam Fakhouri, Jamal Zraqou, and Jorge Marx Gómez. "Usability Heuristics for Metaverse." *Computers* 13, no. 9 (2024): 222. doi:https://doi.org/10.3390/computers13090222. https://www.proquest.com/scholarly-journals/usability-heuristics-metaverse/docview/3110441085/se-2.

Laine, Teemu H. and Jung Suk Hae. "Investigating User Experience of an Immersive Virtual Reality Simulation Based on a Gesture-Based User Interface." Applied Sciences 14, no. 11 (2024): 4935. doi:https://doi.org/10.3390/app14114935. https://www.proquest.com/scholarly-journals/investigating-user-experience-immersive-virtual/docview/3067399932/se-2.

MY.GAMES. (2023, September 20). UX Trends in the Gaming Industry, 2023 - MY.GAMES Medium. *Medium*. https://medium.com/my-games-company/ux-trends-in-the-gaming-industry-2023-7133fc9cb034

Navin. (2024, October 16). *Game UX Design – Why is UX important in 3D video game development?* Juego Studio. https://www.juegostudio.com/blog/ux-design-in-3d-video-game-development

Nicholls, P. (2023, April 13). *Play is the point: How UX designers can break into the gaming. Industry*. UX Magazine.

https://uxmag.com/articles/play-is-the-point-how-ux-designers-can-break-into-the-gaming-industry

Persada, A. G. 2019. "User Experience on Games Development Trends." Journal of Physics: Conference Series 1341 (4) (10). doi:https://doi.org/10.1088/1742-6596/1341/4/042010. https://www.proquest.com/scholarly-journals/user-experience-on-games-development-trends/docview/2568052331/se-2.

Riccardo, Karim Khamaisi, Elisa Prati, Margherita Peruzzini, Roberto Raffaeli, and Marcello Pellicciari. 2021. "UX in AR-Supported Industrial Human–Robot Collaborative Tasks: A Systematic Review." Applied Sciences 11 (21): 10448. doi:https://doi.org/10.3390/app112110448. https://www.proquest.com/scholarly-journals/ux-ar-supported-industrial-human-robot/docview/2624249458/se-2.