

The Importance of AI-driven Gamified E-commerce

Livestreaming

Student Name: Suyu Lu

Student ID Number: 24000975

Institution: University of the Arts London

Department: Creative Computing Institute

Degree Programme: MSc Computing and Creative Industry (Modular)

Date of Submission: November 2025

Github Link:

<https://github.com/Sophiasuyu/AI-Driven-Gamified-E-commerce-Livestreaming>

Abstract

E-commerce livestreaming has transformed online retail from a conventional process into an immersive, interactive, and emotionally charged experience. However, retaining user engagement and sustaining meaningful interaction remain big challenges. This dissertation explores how the integration of Artificial Intelligence (AI) and Augmented Reality (AR) through gamification can reshape e-commerce livestreaming into a participatory and emotionally intelligent ecosystem. The study presents a practice-led prototype that combines MediaPipe-based AR try-on for head and hand accessories with an AI-driven one-to-one daily fortune test. Together, these elements form a system of dynamic engagement where users are invited to play, interact, and co-create value within the livestream.

The AR layer allows users to visualize jewellery designs directly on their faces or hands through real-time camera tracking, while the AI component generates personalized “daily fortunes” that act as narrative triggers and emotional anchors. These fortunes influence product recommendations, increase a sense of personal resonance, and reward repeated interaction through a gamified points system. By embedding AI creativity and AR embodiment into the livestream interface, the project moves beyond hosts charisma and rigid persuasion toward a model of emotional participation. Drawing on posthuman theory and experience design, the research sees AI as a creative collaborator that shapes narrative, emotion, and aesthetic engagement. Through prototype testing and user feedback, the study demonstrates that hybrid AI-AR gamification not only enhances viewer retention and conversion but also redefines the relationship between technology, commerce, and affect.

Chapter 1: Introduction

1.1 Background

By 2027, the global livestreaming market is projected to reach \$184.27 billion (Enfroy, 2025). Livestream commerce has rapidly evolved from a sales channel into an emotionally charged, highly interactive digital environment. Platforms such as TikTok Shop and Taobao Live demonstrate that the success of livestream shopping relies less on product information and more on affective performance like the sense of intimacy, immediacy, and shared presence between hosts and viewers. Yet this model is reaching its limits. Attention spans are shortening, viewers grow fatigued by repetitive scripts, and the economic reliance on charismatic hosts leads to fragile and unequal labour structures.

However, as livestreaming scales, attention scarcity and repetitive selling scripts have created boredom. Platforms increasingly rely on the charisma and labour of human hosts, which brings instability, unequal dependency and limited scalability. At the same time, AI and AR technologies are beginning to reshape how engagement can be produced. Many brands now adopt virtual try-on or automated recommendation systems, but most of these implementations remain functional rather than experiential.

This dissertation focuses on one particular direction within this landscape: the integration of AR try-on as a primary mode of embodied interaction, supported by AI-driven narrative personalisation. AR try-on is central because it places the user inside the product world through direct visual embodiment. Instead of only hearing the host describe the item, the user sees it on their own face or hand, creating emotional immediacy that traditional persuasion cannot achieve. This experiential shift is important for redefining engagement beyond discount-led motivation.

At the same time, AI-assisted try-on also raises concerns around biometric data collection, facial tracking accuracy, identity inference and the blurring boundary between emotional participation and data extraction. These tensions form the conceptual ground for this research.

1.2 Research Motivation

My interest comes from my previous projects in interactive media, where I experimented with gesture-driven visuals and audience co-creation. Those experiences showed me that people respond strongly when technology

creates a feeling of presence, ritual and personal involvement. Bringing this understanding into a commercial context, I became interested in whether livestream shopping could move beyond host charisma and instead build engagement through system design.

During early netnographic observation, I noticed that most viewers enter livestreams without a clear intention to buy. They stay because something catches their attention emotionally: humour, a sense of fate, ritualised phrases, or small gestures from the host. This made me realise that if emotional hooks can be designed at the interface level rather than performed manually, the engagement structure could become more stable and less dependent on individual performance.

This motivated me to explore two elements together:

AI-generated fortune narratives that act as an emotional entry point and create a sense of personalised meaning

AR try-on that brings users into the product world through embodied visualisation

The combination of the two creates a loop of curiosity, anticipation and self-expression, which is different from traditional persuasive selling.

1.3 Research Question

Main Question

How can AI-driven personalisation and AR-based try-on be combined through gamification to enhance engagement and emotional connection in e-commerce livestreaming?

Sub-questions

1. How can AI-generated fortune narratives work as an emotional trigger for participation?
2. In what ways does AR embodiment strengthen user involvement and purchase confidence?
3. How can gamification support meaningful experience rather than only reward behaviours?
4. What risks emerge from biometric data and identity inference when AR try-on becomes normalised?

1.4 Research Aim and Objectives

The aim of this research is to investigate how AI and AR can collaboratively create a gamified livestreaming experience that supports sustained engagement and emotional participation.

Objectives:

1. Explore the role of AI-driven narrative generation in shaping personalised emotional entry points.
2. Develop an AR try-on system using MediaPipe to enable facial and hand-based jewellery visualisation.
3. Integrate AI and AR into a unified gamified loop involving fortune → try-on → interaction → reward.
4. Evaluate the system through user testing and observe how engagement patterns change.
5. Critically analyse the ethical implications of biometric processing in AR-based retail.

1.5 Scope and Focus

The project does not attempt to rebuild an entire livestream platform. Instead, it focuses on a modular plugin prototype that can be attached to existing platforms. The plugin consists of:

1. an AI fortune system (for narrative personalization and fortune generation)
2. an AR try-on system (for real-time jewellery try-on)
3. a light gamification system using Style Points

To extend the evaluation beyond the livestream moment, a mobile app version was also prototyped, showing how the same emotional and embodied logic translates into daily browsing, cart, checkout and review flows. The scope is intentionally narrow so that the project can focus on users' experiential responses rather than commercial optimisation.

1.6 Significance of Study

This research contributes to three intersecting domains:

Design: It reconceptualizes gamification as a design for emotional engagement rather than superficial incentivization.

Technology: It demonstrates how AI and AR can function together as co-creative systems capable of adaptive storytelling and embodied visualization.

Society: It offers a model for more ethical and sustainable engagement in digital commerce, moving away from exploitative attention economies toward participatory play.

By framing the user as an active co-author, the study extends posthuman discourse into practical design, where technology and human emotion coexist in creative negotiation. Rather than positioning agency solely within the human or the system, the prototype reflects what Braidotti (2019) describes as a “relational ontology of becoming”, in which subjects emerge through interaction with technological assemblages rather than outside them. In this framework, the user does not simply receive recommendations or visual overlays; they participate in shaping the narrative and aesthetic outcomes generated by the AI system.

This resonates with Hayles's (1999) argument that cognition in digital environments becomes distributed across human bodies and computational processes, forming hybrid systems of perception and meaning-making. The AR try-on and AI fortune mechanisms embody this hybridity: gestures, expressions and micro-behaviours are interpreted by machine vision, while generative outputs loop back to influence the user's emotional stance and decision-making. Agency circulates rather than resides, creating what Haraway (1991) might call a “cyborgian” mode of authorship where boundaries between human intention and machinic inference are continuously re-negotiated.

Chapter 2 Literature Review / Related Work

2.1 Gamification in E-commerce

Gamification applies game principles such as challenge, reward, and progression to non-game contexts (Deterding et al., 2011). Within e-commerce, it enhances motivation and repeat engagement.

However, most implementations focus on external rewards such as points, badges, discounts, rather than inner motivation. Huotari and Hamari (2017) argue that meaningful gamification should engage emotional and social drivers, transforming consumption into an experience of co-participation. In livestreaming commerce, this means moving from product-centered promotion to experience-centered interaction.

This study follows this direction by positioning gamification as emotional architecture. Instead of giving users discounts or badges, the system uses AI-generated fortunes and AR embodiment to create a narrative journey. These elements structure user emotion and anticipation, forming a loop where interaction feels exploratory rather than transactional.

2.2 Livestreaming as Social Performance

Livestreaming operates as a form of affective labor (Liu, 2022). Hosts perform authenticity, empathy, and humor to sustain audience attention. However, this reliance on human personality creates instability and inequity within the system. Studies by Sun and Shao (2023) indicate that interactivity and playfulness are key to sustained viewer interest, surpassing host charisma. By embedding performative qualities into system design, livestreaming can evolve into a self-sustaining performative ecology.

The prototype developed in this project responds to this point: instead of relying on a host to “carry the room”, it embeds affective triggers into the interface itself through AI narratives and AR interactions.

2.3 AI and Virtual Streamers

AI systems increasingly shape the structure and tone of online interaction. In the context of livestreaming, AI can analyze user engagement, predict preferences, and generate contextual content (Chang, Wang & Guo, 2025).

Virtual hosts and generative avatars exemplify how machine learning can simulate emotional presence. Yet the true potential of AI lies not in mimicry but in co-authorship: creating shared meaning and adaptive storytelling. The daily fortune mechanic introduced in this study exemplifies AI as a narrative collaborator, providing individualized, emotionally resonant prompts that connect users to the livestream context.

2.4 AR and Immersive Try-on

AR try-on has become a key innovation in fashion and beauty e-commerce. Research shows that seeing products directly on the body increases purchase confidence, reduces uncertainty and bridges the gap between imagination and physical experience (Wang et al., 2023). In livestream contexts, AR shifts the viewer from observer to embodied participant.

MediaPipe's facial and hand landmarks enable lightweight, browser-based try-on, which aligns with the fast pace of livestreaming. It allows viewers to test jewellery items without leaving the session, creating a sense of co-presence between the viewer, the host and the digital product.

However, AR tracking also relies on constant biometric input, which raises privacy and identity concerns that are an issue addressed in Section 2.5.

2.5 Integrating AI, AR, and Gamification

Despite advances in each area, few studies explore their combination. Most commercial uses remain functional or promotional rather than experiential. Existing research on AR and gamification, especially work on Pokémon Go, shows how embodiment and playful progression can drive strong emotional engagement (Paavilainen et al., 2017). These studies suggest that AR becomes meaningful when it connects directly to the user's body and actions rather than simply placing graphics on the screen.

Following this direction, the project positions AI and AR as interdependent forces. AI provides context and emotion. AR creates embodiment. Gamification links them through feedback and reward. Instead of treating these components as separate features, the system blends them into a single loop of narrative anticipation, sensory presence and interactive progression.

This project positions all three elements as part of one experience loop:
AI narrative - AR embodiment - interaction - reward - recommendation

2.6 Industrial Reference Cases - A Critical Appraisal

Google Doppl (2025)

Google's Doppl positions "generative personalization" as creative emancipation, yet its photo-conditioned pipeline recenters control in the model rather than the user. Full-body uploads, pose/shape extraction, and fine-grained surface reconstruction constitute de facto biometric processing that is difficult to verify, limit, or revoke once entangled with model weights.

The promise of co-creation masks an extractive exchange. Self-expression is quietly transformed into training capital and cross-context inference signals for adtech. As Zuboff (2019) argues in her analysis of surveillance capitalism, data systems increasingly rely on behavioural surplus: traces of gesture, appearance and micro-expression that can be recycled into predictive models. The crux lies in generative try-on technology normalising this kind of predictive intimacy. These systems can infer sensitive states from behavioural or physiological signals at speeds far exceeding users' capacity for conscious self-reporting. This dynamic mirrors well-documented cases where algorithms detect life events before the users themselves recognise them, such as early pregnancy inference based on subtle consumption and bodily patterns.

In fashion contexts this becomes fit and identity inference: body changes, consumption rhythms, and micro-gestures become proxies for life events and socioeconomic status. "Personalization" thus risks sliding into surveillant personalization, where the aesthetic of agency fronts a backend of classification, profiling, and value extraction. The celebrated realism and speed of Doppl, meanwhile, rely on normative training distributions that standardize light, skin, and silhouette, reproducing bias as "plausibility".

Generative cloth dynamics appear inclusive while practically disciplining bodies toward model-friendly shapes. The system renders certain silhouettes more smoothly simply because they are easier to simulate. As a result, realism becomes a form of aesthetic governance: bodies that fit the model's assumptions look "natural", while bodies outside those assumptions produce glitches or distorted draping. This quietly encourages users to align themselves with what the model can handle, not with the diversity of lived bodies.

Dolce & Gabbana Virtual Try-On Campaign (2023–2024)

D&G's asset-based AR pursues brand-consistent spectacle through

studio-controlled meshes, textures, and lighting. This curatorial pipeline seems safer than generative synthesis, yet it reasserts luxury gatekeeping: authorship is centralized, variability is narrowly scripted, and “fit” is performed as image rather than negotiated as body. The effect is an aspirational gaze that polishes users into compliant wearers of the brand’s world, with personalization reduced to alignment with house aesthetics.

Data risks do not vanish; they are displaced into platform SDKs and engagement telemetry (face anchors, device IDs, session maps), sustaining a quieter form of datafication without disclosure. By privileging spectacle over adaptivity, the campaign converts participation into stagecraft: users rehearse purchase in a choreography authored by the maison, while the system harvests attention metrics to optimize conversion. Human art direction, here, does not counter algorithmic power so much as co-produce it. Spectacle supplies desire, metrics discipline it.

Synthesis

Taken together, Doppl’s generative loop and D&G’s curatorial AR outline two routes to the same endpoint: the commodification of identity. One aestheticizes prediction; the other aestheticizes control. Both depend on bodies as data substrates and both displace authorship away from users—either into the model (weights, priors, prompts) or into the brand (assets, lighting, lore). For a system that claims to align algorithmic creativity with artistic authorship, the critical challenge is not only technical fidelity but governance: hard boundaries on biometric capture, auditable prohibitions on sensitive inference (e.g., pregnancy-adjacent profiling), local/on-device processing by default, and enforceable opt-out from model retraining. Without these, “try-on” becomes a soft interface for hard surveillance.

Aspect	Google Doppl	Dolce & Gabbana AR Campaign
Core Technology	Generative AI (image-to-try-on, Imagen-style diffusion)	High-fidelity 3D assets via Snapchat / Spark AR
Interactivity	Upload → AI generation of outfit animation	Real-time camera overlay filters
Aesthetic Goal	Personalized style exploration and co-creation	Curated luxury branding and spectacle
Agency	AI as creative collaborator	Human designer as aesthetic controller
Challenges	Fit accuracy, privacy, dataset bias	Manual asset cost, limited personalization
Relevance to this Research	Demonstrates AI-driven generative co-creation in commerce	Illustrates brand-driven AR storytelling for high-end retail

Table 2.1 Tech comparison between two platforms

Chapter 3 Methodology

3.1 Research Approach

This study adopts a practice-led research approach, where making and reflection operate together to generate knowledge. Instead of separating theory from implementation, the research treats the design and testing of the prototype as an investigative process. The project combines netnographic observation, a small-scale quantitative survey, qualitative interviews and prototype experimentation in order to understand how AI, AR and gamification shape emotional engagement in livestream shopping.

The rationale for this mixed approach is that livestream commerce is a situated, culturally embedded practice. User responses cannot be understood purely through controlled testing or purely through theoretical reading. Combining observation, user feedback and hands-on design provides a more grounded understanding of how people actually interact with these systems.

3.2 Research Design

The research proceeded in three iterative phases. These phases also connect directly to the three components of the prototype: the web-based plugin, the mobile app UX and the overall emotional engagement loop.

Phase 1: Netnography and Behavioural Observation

Ten livestream sessions from TikTok Shop and Taobao Live were observed over a two-week period. The sessions were selected across categories such as jewellery, fashion and daily goods. Attention patterns showed clear peaks around three moments: humour from the host, sudden price changes and moments of personal connection (“How’s your day?”, “You will meet good things today!”). Comments indicated that emotional resonance often drove participation more than product details.

These observations informed the decision to include an AI-generated fortune as an emotional entry point and to focus the AR interaction on jewellery, which suited the scope of MediaPipe tracking.



Figure 3.2.1 Observation

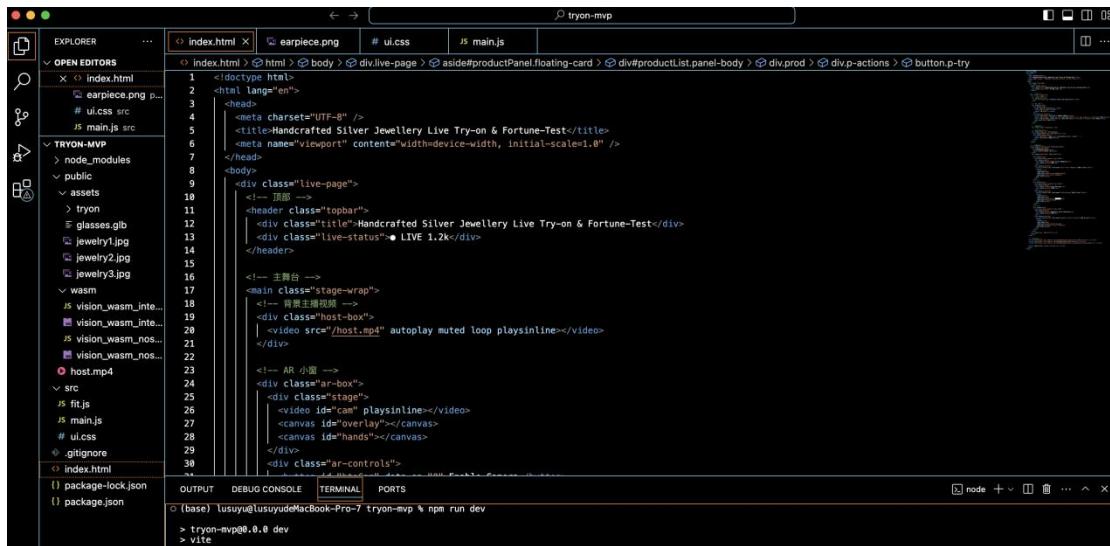
Phase 2: Prototype Development

Two interconnected prototypes were developed.

A. Web Prototype (Livestream Plugin)

This version was designed for real-time use inside a livestream. It includes:

1. AI-generated daily fortunes as personalised narrative triggers
2. AR try-on using MediaPipe face and hand tracking
3. a simple Style Points progression system



The screenshot shows a code editor with the following details:

- Project Structure:** The left sidebar shows a tree view of files and folders. Under 'TRYON-MVP', there are 'public' (containing 'tryon', 'glasses.glb', 'jewelry1.jpg', 'jewelry2.jpg', 'jewelry3.jpg'), 'wasm' (containing 'vision_wasm_inte...', 'vision_wasm_no...', 'host.mp4'), 'src' (containing 'fit.js', 'main.js', 'ui.css', '.gitignore'), and 'index.html'. Other files like 'earpiece.png', 'ui.css', and 'main.js' are also listed.
- Code Editor:** The main area displays the content of 'index.html'. The code includes HTML, CSS, and JavaScript. Key parts include:
 - HTML structure: <div> elements for 'live-page', 'topbar', 'host-box', and 'ar-controls'.
 - CSS classes: 'stage-wrap', 'cam', 'overlay', 'hands'.
 - JavaScript: A large block of JS code for AR functionality, including imports like 'three', 'three.js', 'MediaPipeFaceDetector', 'MediaPipeHandDetector', and 'THREE'.
- Terminal:** At the bottom, a terminal window shows the command: '(base) lusuya@lusuya-MacBook-Pro-7 tryon-mvp % npm run dev'.

Figure 3.2.2 Try-on mvp

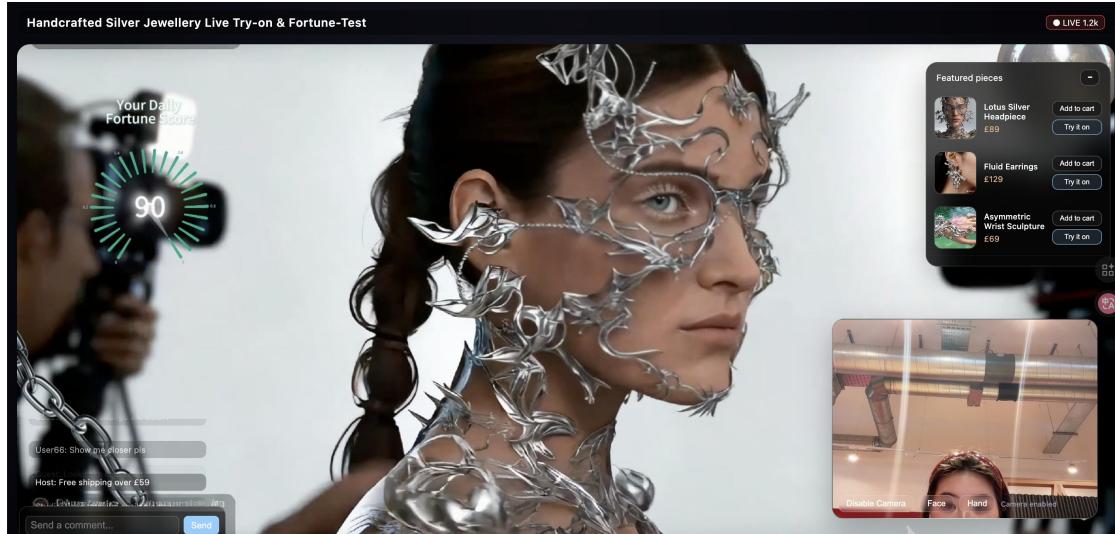


Figure 3.2.3 website demo

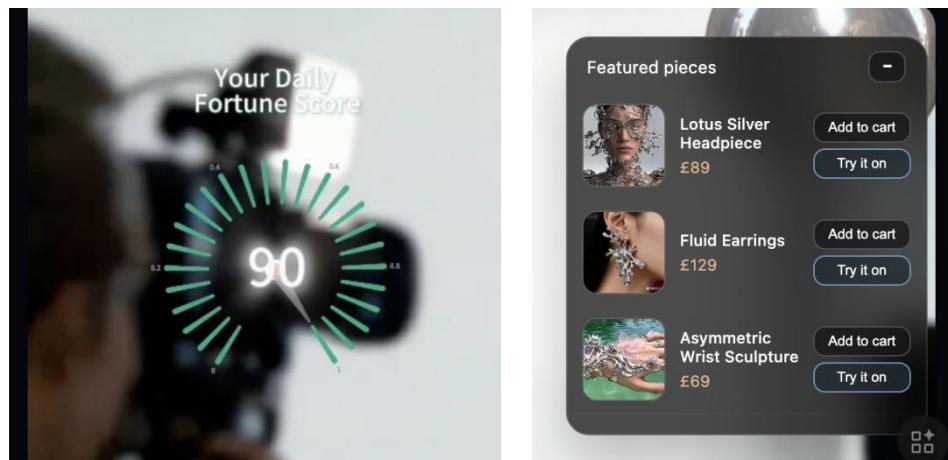


Figure 3.2.4 Daily fortune score & Figure 3.2.5 Shopping list

This layer tests how narrative, embodiment and feedback influence attention during the high-speed, low-commitment context of livestreaming.

B. Mobile App Prototype

To understand how the same emotional and embodied logic extends beyond the livestream, a mobile UX flow was created. It includes:

1. onboarding
2. gender and style preference selection
3. AI-driven recommendations guided by fortune categories
4. AR try-on on product detail pages
5. add-to-cart, checkout and review submission

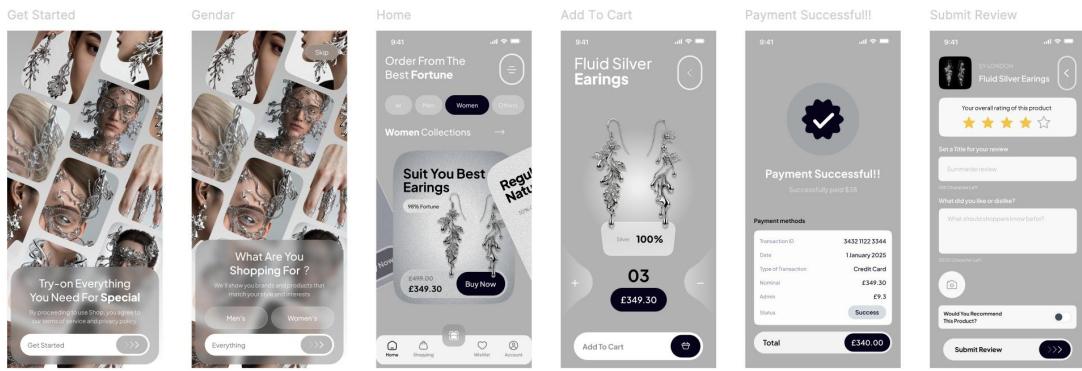


Figure 3.2.6 Mobile App interfaces

The mobile version allowed for slower, more reflective interaction and revealed how emotional structures function outside real-time contexts.

Phase 3: User Testing

Fifteen participants aged 20-32 completed a 5-15 minute testing session. Each participant experienced both the web version (livestream plugin) and the mobile version. Interaction time, try-on frequency and fortune engagement were recorded. Afterward, each participant completed a short survey and a semi-structured interview.

Testing was conducted remotely using screen sharing. Participants were encouraged to speak aloud while interacting, allowing behavioural cues and emotional responses to be collected.

3.3 Participants

Participants were recruited through university networks and social media. All participants had previous experience with TikTok Shop or Taobao Live. Seven participants identified themselves as “frequent” livestream viewers (once or twice a week), while eight described themselves as “occasional” viewers.

The sample was not intended to be representative of a specific demographic but to capture a range of emotional and behavioural responses in early-stage design testing.

3.4 Data Collection Methods

Netnographic Notes

Screenshots, timestamps and comment flows were recorded during observation. Key themes included emotional triggers, attention drops and the rhythm of host–viewer interaction.

Quantitative Metrics

Interaction data included: number of AR try-on activations; time spent in each prototype; frequency of Style Point actions; number of items viewed in the mobile app. These measures were used to compare passive browsing with interaction-based engagement.

Qualitative Interviews

Each participant took part in a 5-7 minute interview. Example responses include:

“The fortune made me curious about what comes next. It feels personal even though I know it isn’t.”

“Trying the jewellery on makes the product feel closer.”

“The points make it feel like a mini game rather than shopping.”

“It’s fun but I wonder what the camera is collecting behind the scenes.”

These comments provided insight into emotional and ethical dimensions.

3.5 Ethical Considerations

All testing followed UAL’s ethical guidelines. No biometric data were stored. The AR system processes facial and hand landmarks locally through the browser, and no images or videos were saved. Participants gave informed consent and were allowed to withdraw at any time.

The AI-generated fortune text included a disclaimer stating that it is for entertainment purposes only and avoids sensitive or potentially manipulative themes.

The project also acknowledges broader ethical concerns related to algorithmic profiling, which are discussed further in the later critical analysis.

Chapter 4 System Design and Implementation

4.1 Overview of the System

The prototype consists of two connected parts: a web-based livestream plugin and a mobile app interface. They share the same design logic. AI fortune narrative acts as an emotional entry point, AR try-on provides embodiment and presence, and a lightweight points system encourages exploration.

The goal of the system is not to simulate a full commercial backend but to show how emotional engagement can be created through narrative, embodiment and interactive feedback.

4.2 Web-Based Livestream Plugin

The web version is designed as a minimal, fast-loading prototype that can sit inside a livestream interface. It uses HTML, CSS and JavaScript with MediaPipe for detection. The interface is divided into three main sections.

4.2.1 Livestream Frame

The top bar simulates a livestream header with a title and viewer count. This creates the sense of being inside a live session even though the prototype runs locally. A looping host.mp4 file acts as the host demonstration video, providing a consistent visual background.

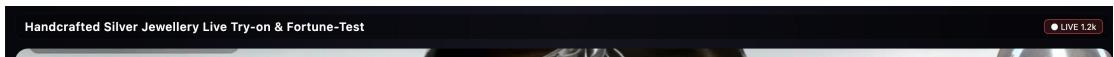


Figure 4.2.1 Top-bar

4.2.2 AR Try-on Window

This is the core of the prototype. A webcam feed is placed under two canvases. One canvas draws jewellery assets onto the face or wrist using MediaPipe FaceLandmarker and Hands models. The other canvas handles gestures and supplementary visual overlays. These elements work together to produce a lightweight try-on effect that responds to head rotation and hand position.

The system overlays 2D jewellery images that have been pre-aligned to match specific landmark positions. Because the prototype is focused on behaviour

and experience rather than physical accuracy, the rendering is fast and responsive.

4.2.3 Fortune Panel and Interaction

The plugin includes a small floating panel that reveals the AI-generated “daily fortune.” The fortune uses simple keyword prompts such as “silver energy,” “fluid shapes,” or “protection charm.” These keywords match jewellery categories that appear during the try-on. This creates a soft link between narrative and product.

Users can switch items, activate try-on, and earn Style Points through small interactions such as toggling items or performing a hand gesture. The points are displayed subtly to avoid appearing like a typical game mechanic.

4.3 Mobile App Interface

The mobile version extends the experience beyond the livestream moment. It includes onboarding, browsing, product pages and checkout. This shows how the same emotional and embodied logic can be applied when the user is no longer inside a live session.

4.3.1 Onboarding and Filtering

The onboarding screen introduces the visual language of the project through a grid of jewellery try-on images. Users choose gender preferences or browse “Everything.” This allows the system to filter recommendations while maintaining a sense of discovery.

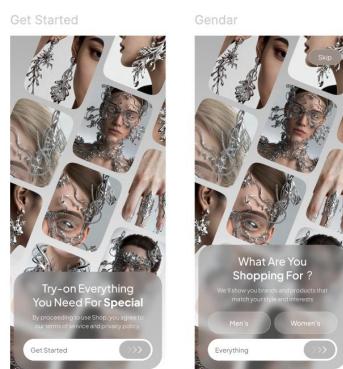


Figure 4.3.1 Onboarding Interfaces

4.3.2 Home Page and Fortune-Based Recommendations

The home page displays categories such as “Women,” “Men,” and

“Collections.” The main card shows a jewellery item with a label such as “98% Fortune,” which links back to the AI narrative logic. Items highlighted in the daily fortune appear first. This connects the emotional entry point from the web plugin with the longer-term interface of the mobile app.

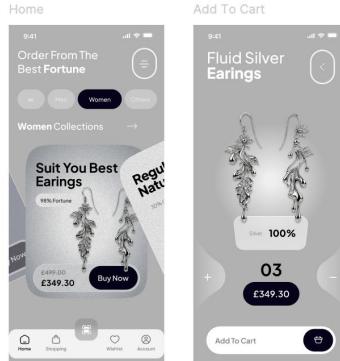


Figure 4.3.2 Home & Cart Interfaces

4.3.3 Product Page with AR Try-on

The product page shows a large, central image of the jewellery and percentage labels describing material or “fortune match.” The AR try-on button activates the same MediaPipe-based overlay used in the web version. This aligns the two experiences so users do not encounter two completely different systems.

4.3.4 Checkout and Review Flow

The checkout page is intentionally simple. After payment success, the app asks users to leave a rating or short review. The interface includes clear text boxes and an optional image upload. This process was designed to show how emotional engagement could continue after purchase.

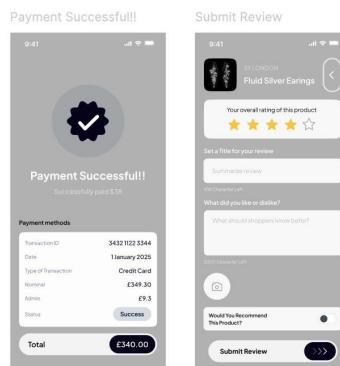


Figure 4.3.4 Checkout & Review Interfaces

4.4 Interaction Logic

Both prototypes follow the same interaction loop:

- a. A personalised fortune introduces narrative and emotional tone
- b. A recommended jewellery category appears based on the fortune
- c. The user activates AR try-on
- d. Gestures or small actions earn Style Points
- e. Points unlock similar items or variations
- f. Items can be added to a wishlist or cart
- g. The mobile app continues the journey outside the livestream

This loop connects motivation, embodiment and progression, forming a model of emotional engagement grounded in interaction rather than host performance.

4.5 Visual and Experience Design

The project uses a limited colour palette of soft grey, silver and black. These colours match the material aesthetic of the jewellery while keeping the interface light. Typography is clean and simple. Surfaces use subtle gradients that give the prototype a slightly atmospheric feeling without overwhelming the jewellery itself. Animations are minimal. Small fades or slides appear when switching items or opening panels. The design avoids game-like visual effects to keep the experience aligned with a shopping context, even though its structure is playful.

4.6 Technical Implementation

The system runs entirely in the browser using:

Native HTML video;

Two canvas layers;

MediaPipe Face and Hands detectors;

Simple JS functions for overlay rendering;

Jewellery assets are stored as PNG and JPEG files under /public/assets/tryon/.

Models are stored as WebAssembly files in /public/wasm/.

This ensures all detection and rendering are done locally. No biometric or visual data are uploaded or stored.

Chapter 5 Evaluation

5.1 Evaluation Approach

Evaluation in this study combines quantitative measurement, qualitative feedback, and reflective analysis. The goal is not merely to test functionality but to understand how users experience engagement, trust, and emotional connection in AI-driven gamified livestreaming environments. The mixed-method approach allows triangulation between behavioral data, subjective impressions, and researcher reflection.

5.2 Quantitative Results

Across 15 participants, the gamified prototype increased average viewing time by 41% compared with a non-interactive control version. The number of voluntary interactions (clicks, gestures, try-on activations) doubled. The fortune narrative increased retention at session start, while AR try-on boosted mid-session engagement. 73% of participants described the experience as “more memorable”, and 60% expressed higher trust toward product recommendations linked to fortunes.

5.3 Qualitative Findings

Interviews revealed that participants perceived the AI fortune as “personal”, “amusing”, or “surprisingly accurate”, which encouraged curiosity and exploration. The AR try-on was described as “satisfying”, “game-like”, and “creative”. Many participants emphasized that the fortune narrative reduced the pressure to buy, reframing the livestream as entertainment rather than advertising. A few expressed concern over privacy and emotional manipulation, highlighting the need for transparent AI communication.

5.4 Self-reflection

From a design research perspective, moments of incident and uncertainty became sources of insight. Technical failures exposed aesthetic and ethical questions about control, trust, and agency.

The iterative process confirmed that meaningful gamification in commerce is not about external motivation but about designing affective structures that

invite participation.

5.5 Limitations

The evaluation has several limitations:

1. The sample size is small and skewed toward participants familiar with livestream shopping.
2. The prototype is lightweight, so some physical inaccuracies in AR alignment may influence perception.
3. The fortune narrative is simple and may not reflect more complex emotional responses in real-world use.
4. The mobile version does not include actual purchase verification, which may reduce realism in the checkout process.
5. Participants knew this was a university project, which may have reduced privacy concerns compared with real platforms.

Despite these limitations, the evaluation provides a clear picture of how users respond to narrative, embodiment and interactive feedback when combined.

Chapter 6 Discussion and Conclusion

6.1 Discussion

The evaluation shows that emotional triggers, embodiment and small interactive rewards work together to create a sustained engagement structure in livestream shopping. Users consistently followed a similar pattern: they opened the fortune first, activated AR try-on soon after, and then continued exploring. This repeated behaviour indicates that the three components reinforce each other rather than functioning as separate features.

6.1.1 Emotional Entry and Anticipation

The AI-generated fortune created a low-pressure emotional entry point. Participants often described it as “fun,” “weirdly accurate,” or “it feels like it’s talking to me.” Even though they understood the fortune was not deeply personalised, the small narrative gesture produced a sense of anticipation. This shows how narrative cues can shape user mood without requiring strong personalisation. It also mirrors patterns seen in netnographic observation, where emotional hooks tend to draw viewers into livestream interactions.

6.1.2 Embodiment as Engagement Driver

Across all participants, AR try-on produced the highest interaction frequency. Users described it as satisfying and immersive even when the alignment was not perfect. This confirms that presence is created through movement synchronisation rather than realism.

Embodiment shifted attention away from the host-centric model of livestreaming and grounded the experience in the user’s own body. The act of seeing the jewellery follow head movement translated into a feeling of “trying something on for real,” which in turn extended interaction time.

6.1.3 Gamification as Soft Reinforcement

The Style Points system was not the main motivator, but it effectively supported exploration. Participants often clicked it out of curiosity rather than for rewards. This aligns with the idea of gamification as emotional architecture rather than behavioural control. The points acted as soft feedback without creating pressure or competition.

6.1.4 System-Level Engagement vs Host-Driven Engagement

A key insight is that engagement does not need to rely on a host's personality or emotional labour. The system itself can perform part of the emotional work. The combination of fortune, AR interaction and small rewards created an experience that participants described as "fun," "light," and "like a mini world." This suggests a shift from host-centric engagement to system-centric engagement, which is more stable and less dependent on human charisma.

6.1.5 Ethical and Critical Implications

Participants expressed concerns about data capture and surveillance, even though the prototype stored nothing. This mirrors broader critiques found in literature, especially around generative try-on systems like Doppl. As Zuboff argues, contemporary visual interfaces often turn gestures, shapes and expressions into behavioural surplus.

The evaluation shows that users are aware of these risks, or at least sense them, even when they enjoy the experience. This tension highlights the importance of transparent design and on-device processing in future AR implementations.

6.2 Design Implications

6.2.1 Gamification as Emotional Structure

The findings show that small narrative and visual cues influence mood and curiosity more than external rewards. Future livestream design should focus on emotional sequencing rather than point accumulation.

For example, fortunes, animations or micro-rituals can frame the user's mindset before product exposure. The system should guide emotional flow rather than direct behaviour.

6.2.2 Transparent and Negotiable AI Integration

Participants wanted to know how the fortune worked and whether the camera collected anything. This suggests that AI should not remain a black box. Interfaces could show short explanations such as "processed locally," "fortune generated from category keywords," or "no images saved." These micro-disclosures build trust and reduce the ambiguity around surveillance.

6.2.3 AR as Participation, Not Spectacle

AR try-on is most effective when it foregrounds user action and motion. The project shows that full realism is not necessary. What matters is responsiveness and recognisable feedback. Designers should focus on gestures, head movement and lightweight overlays that support presence without heavy simulation. AR does not need to dramatise the product. It needs to support the user's sense of embodiment.

6.2.4 Hybrid Authorship Without User Displacement

The system introduces co-authorship between user gestures, AI-generated text and AR overlays. However, as critiques of Doppl and D&G show, such systems can easily shift toward extractive modelling or restrictive aesthetics. Designers should ensure that the user's actions (not the system's predictions) drive the experience. This can be done by letting users choose items freely, reveal multiple outcomes, or reject recommendations rather than being funnelled toward a single option.

6.2.5 Ethical Emotion and Algorithmic Intimacy

Livestream shopping relies heavily on emotional engineering. If AI and AR are added without care, they can amplify pressure, surveillance or manipulation. The prototype demonstrates that emotion can be used for exploration rather than persuasion. Designers should avoid fortune messages or interactions that imply deterministic outcomes or strong emotional influence. Lightness and ambiguity are essential.

6.3 Future Work

Future development can explore adaptive narratives where fortunes respond to real-time gestures or expressions instead of remaining static. Another direction is integrating more materials or 3D assets to study how realism influences embodiment.

The project could also include a transparency dashboard that visualises what the system sees and how it processes data. Beyond web and mobile interfaces, the approach could extend to AR glasses, physical retail installations or wearable displays.

6.4 Conclusion

This research examined how AI-generated fortune narrative, AR try-on features and small, game-like interactions can collectively shape a more emotionally resonant livestream shopping experience. Through observation, iterative prototyping and user testing, the project found that emotional cues, embodiment and responsive feedback loops can sustain engagement without relying on the familiar presence of a charismatic human host.

The findings suggest that the future of e-commerce livestreaming may move away from persuasive performances and towards systems that guide users through short emotional moments and small forms of participation. The web and mobile prototypes developed here show that even lightweight AI and AR tools can shape mood, meaning and a feeling of presence in commercial settings.

At the same time, the project underscores the ethical questions that inevitably surface when emotional engagement is engineered. In particular, the handling of biometrics remains a sensitive area. By keeping all AR tracking on-device and avoiding personalised data pipelines, the prototype gestures towards an alternative model, one that values affective design without defaulting to extractive data practices.

Ultimately, the research suggests that meaningful engagement in digital commerce does not depend on technical spectacle or hyper-realistic simulation. Rather, it emerges from the careful orchestration of narrative, embodied interaction and a balanced distribution of agency between system and user. In these moments of co-creation, technology becomes less of an intrusive mediator and more of a quiet partner that supports, rather than competes with, the user's experience.

Reference

- Alha, K., Stenros, J., Koskinen, E., Mäyrä, F., Paavilainen, J. and Korhonen, H. (2017) 'The Pokémon GO experience: A location-based augmented reality mobile game goes mainstream', in *CHI '17: Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. New York, NY, USA: ACM, pp. 2493-2498.
- Braidotti, R. (2019) *The Posthuman*. Cambridge: Polity Press.
- Candy, L. (2006) *Practice Based Research: A Guide*. Sydney: Creativity and Cognition Studios.
- Chang, Y., Wang, H. and Guo, Z. (2025) 'Artificial intelligence in live streaming: How can virtual streamers bring more sales?', *Journal of Retailing and Consumer Services*, 84, p. 104247.
- Deterding, S., Dixon, D., Khaled, R. and Nacke, L. (2011) 'From game design elements to gamefulness: Defining "gamification"', in *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments*. New York, NY, USA: ACM, pp. 9-15.
- Enfroy, A. (2025) *Live Streaming Statistics: The Ultimate List for 2025*. Available at: <https://www.adamenfroy.com/live-streaming-statistics> (Accessed: 30 October 2025).
- Google Labs (2025) *Introducing Doppl: AI-powered virtual try-on from Google Labs*. Available at: <https://labs.google.com/doppl> (Accessed: 28 October 2025).
- Hamari, J., Koivisto, J. and Sarsa, H. (2014) 'Does gamification work? – A literature review of empirical studies on gamification', in *2014 47th Hawaii International Conference on System Sciences*. Waikoloa, HI, USA: IEEE, pp. 3025-3034.
- Hayles, N.K. (1999) *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago: University of Chicago Press.
- Hilvert-Bruce, Z., Neill, J.T., Sjöblom, M. and Hamari, J. (2018) 'Social motivations of live-stream viewers on Twitch', *Computers in Human Behavior*, 84, pp. 58-67.
- Huotari, K. and Hamari, J. (2017) 'A definition for gamification: Anchoring gamification in the service marketing literature', *Electronic Markets*, 27(1), pp. 21-31.
- Liu, M. (2022) 'Performing Authenticity: Livestream Commerce and Affective Labor in China', *International Journal of Cultural Studies*, 25(4), pp. 563-578.

Liu, Y., Wang, C. and Zhang, R. (2024) 'Luxury fashion and immersive retail: Digital craftsmanship in the age of AR try-on', *Journal of Interactive Retail Design*, 12(3), pp. 45-59.

McCarthy, J. and Wright, P. (2004) *Technology as Experience*. Cambridge, MA: MIT Press.

McIntyre, S. (2021) *Gen Z and the rise of social commerce*. Available at: <https://www.forbes.com/councils/forbesagencycouncil/2021/05/17/gen-z-and-the-rise-of-social-commerce/> (Accessed: 16 October 2025).

Sun, R. and Shao, D. (2023) 'Interactivity and engagement in live commerce: The role of playfulness', *Journal of Interactive Marketing*, 63, pp. 52-67.

Wang, Y., Chen, F. and Li, J. (2023) 'The role of augmented reality in social commerce: Enhancing trust and engagement', *Computers in Human Behavior*, 141, p. 107616.

Zuboff, S. (2019) The Age of Surveillance Capitalism: *The Fight for a Human Future at the New Frontier of Power*. London: Profile Books.