

# SOCIAL IMPACT OF RE:LIVE CRUÏLLA

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**GitHub Link** - <https://github.com/SynthesisII/Re-Live-Cruilla.git>

**Abstract**— As artificial intelligence becomes increasingly embedded in cultural and social contexts, new opportunities emerge to explore its role in shaping collective experiences and personal identity. This paper presents Re:Live Cruilla, a generative AI system designed for the Cruilla Festival in Barcelona, which transforms attendee data into personalized digital souvenirs, including symbolic pets, stylized avatars, and memory-enhanced photo albums. By combining user input, real-world images, and AI-driven visual outputs, the system offers an emotionally resonant way to remember and reinterpret live events. Grounded in a Living Lab methodology, the project was deployed in a real festival setting to evaluate its social, ethical, and regulatory implications. Key themes addressed include symbolic representation, memory politics, data privacy, and inclusive design. Through literature review, stakeholder interviews, and on-site experimentation, the study demonstrates how culturally embedded AI systems can enrich user experience while foregrounding critical questions of fairness, authorship, and identity in AI-mediated storytelling.

**Keywords**— Generative AI, Personalization, Avatar generation, Data Ethics, Cultural technology.

## 1 INTRODUCTION

As artificial intelligence becomes more embedded in everyday life, its role in cultural and social spaces is rapidly expanding. Re:Live Cruilla is a project that explores this intersection, aiming to enrich the experience of festival-goers through generative AI. Developed specifically for the Cruilla Festival in Barcelona, the project investigates how technology can offer new ways of remembering, sharing, and identifying with lived experiences, without replacing their emotional or collective value. Cruilla is not only known for its music and performances but for fostering a unique atmosphere of diversity, connection, and joy. Our system enhances this spirit by creating personalized digital souvenirs, such as avatars tailored to the user's appearance and preferences, based on input like photos and responses to short surveys. Each element is designed to be playful, expressive, and deeply tied to the user's personal journey through the event. Unlike generic digital souvenirs, Re:Live Cruilla creates personalized AI-generated artifacts that reflect each attendee's identity and experience. It also prompts reflection on representation, data ethics, and how social memories are constructed, contributing to the broader debate on responsible innovation. This paper analyzes Re:Live Cruilla from a social innovation perspective, focusing on the ethical, legal, and identity-related questions that arise when AI interacts with personal data and representation. Through a real-world pilot using a Living Lab approach, we will examine how attendees respond to AI-generated memories, and what this reveals about the

future of cultural technologies.

## 2 CONTEXT

Music festivals have increasingly adopted digital technologies to manage logistics and engage audiences. However, the use of artificial intelligence to generate personalized, symbolic outputs remains largely unexplored. These events, socially diverse and emotionally charged, present a valuable context for examining how AI can contribute to identity expression and the construction of meaningful personal memories. Recent research has explored AI-driven personalization in cultural and commercial contexts. In museums, human-centred AI systems have been developed to enhance accessibility and engagement by adapting content to diverse user needs and profiles (Pisoni et al., 2021). In retail, diffusion-based generative models have been applied to recommend personalized fashion outfits that reflect individual aesthetic preferences and contextual factors (Xu et al., 2024).

In avatar generation, Research on Digital Virtual Human Head Avatar Generation Technology with Cartoon Style introduced a GAN-based system to create stylized head avatars from user photos, addressing copyright and dataset challenges. Although technically promising, such systems are rarely applied to live event contexts. Tools like filters or preset avatars remain generic and disconnected from the user's real experience.

Existing literature also highlights the importance of addressing fairness and representation in generative outputs. This is particularly relevant in festivals, where users come from diverse cultural and identity backgrounds. Re:Live Cruilla builds on these approaches by generating stylized avatars based on both the user's appearance and

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their festival experience. The system moves beyond templates, offering personalized digital souvenirs rooted in context and symbolism. While some projects have explored avatar customization or AI-driven content in cultural settings, there appears to be no documented system that combines generative AI, user data, and event-specific experiences in this way. In doing so, Re:Live Cruïlla opens new avenues for inclusive, ethical, and experience-driven personalization in live cultural environments.

### 3 DEVICE: RE:LIVE CRUÏLLA

#### 3.1 Levels of Interaction

Re:Live Cruïlla is a multi-level interactive system designed to generate personalized digital memories for festival attendees. It merges artificial intelligence with experiential data to produce playful and emotionally engaging outputs that reflect each individual's journey through the Cruïlla Festival. The system consists of three progressive levels:

##### 3.1.1 Level 1: Festival Pet

A simple yet engaging entry point, the Festival Pet is a digital creature (e.g., a dog, cat, or abstract form) customized with accessories that represent the attendee's festival journey and musical preferences. These accessories are inferred from survey responses. For instance, a participant who visited food trucks might receive a pet holding a burger, while someone who attended rock concerts might see a punk collar on their pet. This level is built using a lightweight rule-based system that maps encoded preferences to symbolic accessory combinations. Each user and accessory is represented by a vector encoding genre preferences. Using cosine similarity, we select the best-matching accessories from a curated dataset of 106 items. A scoring algorithm then evaluates candidate combinations based on global style matching, individual accessory relevance, and alignment with the user's highest-weighted preferences. The selected combination is rendered on the base pet, producing a symbolic, easy-to-share representation of the user's festival experience.

##### 3.1.2 Level 2: Personalized Avatar

Attendees take a waist-up photo, which is then transformed into a 2D anime-style avatar using generative AI. This avatar preserves their appearance and is visually adapted to their experience based on the survey responses. For example, fans of electronic music may receive neon-themed styling, while jazz enthusiasts might appear in vintage clothing. The avatar serves as the user's consistent digital identity across the remaining system levels. This is achieved through a diffusion-based image-to-image generation pipeline using Stable Diffusion XL, which accepts both image and prompt as input. The prompt is derived from the user vector and accessory preferences. The model's encoder-decoder U-Net architecture ensures that the avatar retains visual coherence with the original input. To align style and content, we fine-tune the model using LoRA (Low-Rank Adaptation), targeting specific neurons with backpropagation over a curated dataset of synthetic avatars.

##### 3.1.3 Level 3: Polaroid Carousel

In the final level, users upload their own photos taken during the festival. For example, near a stage, on the food court, or dancing with friends. The system integrates their personalized avatar into these real photographs using generative AI techniques. The result is a series of hybrid images in which the digital self appears to have been present during the documented moments, creating a stylized yet emotionally resonant reimagining of the festival experience. Together, these images form a dynamic memory album, a curated digital souvenir that blends user reality with symbolic representation. This stage relies on an encoder-decoder architecture with Transformer modules to seamlessly embed the avatar into real-life scenes while preserving visual coherence. The dataset for training is generated synthetically using Detectron2 for instance segmentation, OpenCV for inpainting, and composite image building. The encoder, based on a modified ResNet50, processes six-channel inputs (avatar + background), generating deep features and skip connections. These features are processed by a Transformer encoder with positional embeddings to model scene-wide dependencies. The decoder restores the final image using upsampling and skip connections. Training is guided by a composite loss function (L1, perceptual via VGG16, and masked loss focused on the avatar area) to ensure realism and identity preservation.

## 4 METHODS

Our methodological approach combines academic research with deployment in a real-world cultural setting, structured to evaluate both the technical feasibility and social implications of the system. To ground our work within current knowledge, we conducted a literature review across three domains: avatar-based personalization, generative AI in artistic or cultural applications, and legal-ethical frameworks surrounding AI-generated content. As noted in the context section, existing systems cover related areas, but none combine user data, real-world images, and generative AI within a live event—making Re:Live Cruïlla a novel contribution.

#### 4.1 Interviews and Stakeholder Perspectives

To inform the design of our system, we conducted semi-structured interviews with five key profiles: two festival attendees (users), a legal expert in data protection and AI ethics, a sociologist specialized in digital identity, and a representative from Cruïlla's organizing team. These conversations helped refine both technical and ethical dimensions, especially regarding transparency, agency, and symbolic representation. All interviews were conducted in April 2025, recorded with consent, and qualitatively analyzed for emergent themes.

#### 4.2 Experimental Setup and User Interaction

The Re:Live Cruïlla system is designed to integrate seamlessly into the festival experience, combining mobile interaction with on-site engagement.

The user journey begins in the official Cruïlla app, where attendees are invited to complete a short survey about their musical tastes, planned activities, and interests. Upon submission, the app generates a QR code that encodes their preferences.

At the festival grounds, participants visit a dedicated interactive booth, equipped with a camera and a large digital screen. By scanning their QR code, they trigger the system to take a photo, which is then used to generate their personalized Avatar, which will appear on the screen along with the Pet. The booth also provides a second QR code for users to download their results to their device.

In a future version of the system, users will also be able to upload personal photos via the app. These images will then be processed to embed their personalized avatar directly into the scenes, generating a stylized memory album that reimagines their real moments through an AI-enhanced lens.

The system relies on a modular pipeline combining rule-based logic and AI models. The Pet is generated using a lightweight algorithm that maps survey responses to symbolic accessories. The Avatar is created through a generative image-to-image pipeline using diffusion-based models with personalized conditioning. The final integration into user-uploaded photos leverages deep neural architectures including encoders, decoders, and transformer-based components to ensure visual coherence.

The deployment of Re:Live Cruïlla is conceived as a living lab, embedded directly within the context of the Cruïlla Festival. This setup allows us to test a mid-fidelity prototype (Technology Readiness Level 6) in a real-world, high-density social environment, with authentic users and natural behavior patterns.

We intentionally apply the Living Lab framework as it allows us to test and refine an innovative product within a real-world scenario. In this context, users engage with the system in a natural and non incentivized manner, without participating in its co-development or being positioned as consumers. While the setup does not involve regulatory experimentation, it enables the collection of valuable insights that inform future iterations of the design. Our primary objective is to evaluate public acceptance and engagement, rather than pursue legal validation.

This setup allows us to observe how the public connects with the experience and how it could become part of Cruïlla's future and demonstrate that Cruïlla is ahead in the technological sector by testing new and innovative technologies with the objective of generating better experiences in new mediums for its visitors.

### 4.3 Risk and Compliance Analysis

Re:Live Cruïlla qualifies as a limited-risk AI system under the EU AI Act (Art. 6 and 52.1), as it generates personalized content without affecting rights or making significant decisions. We meet transparency obligations by clearly informing users that the avatars are AI-generated (Art. 52.1).

To ensure compliance, the legal and ethical dimensions of the system have been reviewed in consultation with legal experts, who validated the current design as aligned with EU regulations for limited-risk AI and personal data

processing. Further in the document we will have a detailed explanation of the reasons for the rating.

## 5 DISCUSSION

This section provides a comprehensive analysis of the social, regulatory, and ethical dimensions of deploying our device in a real world scenario. As this technology intersects with themes of identity, memory, privacy, and representation, it is critical to examine its broader societal implications. We explore how different stakeholders are affected, the potential risks of symbolic misrepresentation, regulatory obligations under the GDPR and AI Act, and the ethical considerations guiding development and deployment. This analysis ensures that the project not only complies with legal standards but also aligns with inclusive, human-centered design values.

### 5.1 Social Aspects

The deployment of an AI system that generates personalized avatars based on individual experiences at a festival raises significant questions about representation, memory, identity, and social equity. In this section we will analyze the key actors involved, potential beneficiaries and those at risk, the sociotechnical tensions that emerge, the implicit policies enacted by the system, and possible mitigation strategies for its risks.

#### 5.1.1 Actors and Stakeholders

It is important to take into account the relevant stakeholders whenever considering any type of project. For our case the main stakeholders are: the users, the ones that interact with the system and receive the generated goods; the developers, who design and evaluate the aesthetics of the product, shaping how data is interpreted and translated into the digital; the festival organizers, who have adopted our system to increase audience engagement and the wider society, particularly marginalized groups, who may be indirectly affected by how the system reinforces or challenges social norms. Each actor holds a different kind of power or vulnerability. While users may gain a novel souvenir or identity artifact, they also risk misrepresentation. Developers, while empowered to define aesthetics and logic, bear ethical responsibility. Organizers may benefit commercially or reputationally, but are accountable for user trust and inclusivity.

#### 5.1.2 Symbolic Representation and Sociotechnical Tensions

The system constructs symbolic narratives of user experience, translating preferences and interactions into stylized visual representations. While this offers an engaging and creative way to relive the festival, it also reduces rich, situated experiences into algorithmically manageable forms. In doing so, it enacts a politics of memory: deciding what matters, how identity is encoded, and which elements are foregrounded. This symbolic compression involves risks. Misrepresentation, stereotyping, and exclusion can emerge when complex

identities are simplified into visual tokens. Users from marginalized groups may feel alienated if the avatar fails to reflect their self-image, not only visually but in terms of meaning. Since digital artifacts shape how we remember and share experiences, a mismatch between the user's sense of self and the output can lead to discomfort or loss of agency. These challenges reveal core sociotechnical tensions. The user's subjective reality is abstracted into system-defined categories; efforts to simplify and scale may unintentionally exclude certain bodies, aesthetics, or experiences; and although the avatar is machine-generated, the user co-directs its outcome, raising unresolved questions around authorship, ownership, and recognition. Addressing these tensions requires a reflexive approach to design, one that acknowledges the limits of representation and considers the broader ethical implications of shaping digital identity and memory through AI.

### 5.1.3 Risks of Misrepresentation and Symbolic Violence

One important factor with our project is to ensure that the general public approves of the general sentiment we want to deliver without any misunderstandings. The main risk here lies in the reduction of complex, situated experiences into a simplified symbolic output. An avatar, no matter how detailed, cannot fully encapsulate the richness of a lived experience, which includes relationships, emotions, intentions, and cultural meanings. Without proper handling, symbolic compression can lead to: stereotyping; cultural misrepresentation, specially for non-normative identities and exclusion if certain details such as bodies, genders, or preferences are not accurately or respectfully generated. The expert insight warns that symbolic representation is never innocent. AI systems, even when designed with good intentions, may inadvertently reinforce dominant norms, especially if their training data or design assumptions reflect biased worldviews. For example, gender binarism, normative body types, or cultural clichés could emerge as default aesthetics.

### 5.1.4 Psychological and Social Impact

The device does more than visualize data, it potentially reconfigures memory. Visual representations have performative power: they shape how people remember, talk about, and make sense of their own experiences. According to sociotechnical memory theories, memory is not just internal and cognitive, but also externalized and constructed through artifacts like photos, journals, or avatars. By these reasons the Personalized Avatar may affect the influence a user's autobiographical narrative, how its experiences are shared socially and the user's sense of recognition and belonging. If users do not recognize themselves in the avatar, not just visually, but symbolically, this can lead to alienation or discomfort. Especially for those with marginalized identities (e.g., queer, racialized, disabled individuals), a mismatch between the avatar's output and their self-perception may feel like an imposed identity.

## 5.1.5 Mitigation and Design Considerations

To address the risks that our product might generate we have developed preemptive measures when designing and developing it to ensure that the final product properly reflects a positive attitude. The recommended goals we used are the following: co-design with diverse users, this allows us to ensure the appearance of diverse aesthetic values in our avatar; use contextual symbols, instead of identity-based traits to reduce symbolic overreach; enable user feedback, customization or retrieval so individuals can adjust or reject representations they find unfit and include disclaimers, that remind the user that the avatar is a symbolic construct, not an objective reflection. More fundamentally, design teams must adopt a reflexive design ethic: continuously questioning their assumptions, aesthetics, and data practices, especially when dealing with identity, memory, and emotion.

## 5.2 Regulatory Aspects

Artificial Intelligence regulation is a rapidly evolving domain. In preparing the deployment of our device, we have closely examined the current and upcoming legal landscape. Our analysis has focused primarily on the General Data Protection Regulation (GDPR) and the Artificial Intelligence Act (AI Act), both key components of the European Union's legislative framework. These two instruments operate in tandem: while the GDPR governs the lawful collection, processing, and storage of personal data, the AI Act introduces a risk-based classification of AI systems and establishes specific obligations based on their level of risk. In the context of our device, the GDPR applies to the data layer, and the AI Act governs the behavior of the software system that processes this data. Since AI systems rely on data to function effectively, both regulations are deeply intertwined in ensuring that such technologies are developed and deployed responsibly.

### 5.2.1 Data Handling and Compliance with GDPR

Our system uses two types of input: the user's image and a preference vector, the latter derived from explicit user choices or interactions. Both constitute personal data under Article 4(1) GDPR, as they relate to an identifiable natural person. Either directly (the image) or indirectly (the preference vector, which may allow reidentification or profiling under certain conditions). To ensure full compliance with the principles of data minimization and storage limitation set out in Article 5(1)(c) and (e) GDPR, we do not retain any personal data after it has served its purpose. Once the avatar is generated and delivered to the user, the user's personal data is permanently deleted. This eliminates the need for further technical safeguards, such as data encryption at rest or long-term storage compliance. Furthermore, we do not perform profiling, defined under Article 4(4) GDPR as any automated processing of personal data to evaluate certain personal aspects nor perform clusterings. By avoiding clustering, inference, or behavioral prediction, and by deleting the data immediately, we ensure that no individual can be subject to profiling or automated decision-making within the meaning of Article 22 GDPR.

Although certain forms of processing may be lawful under Article 6(1)(f) GDPR (legitimate interest) or 6(1)(e) (public interest, including research), we have chosen to obtain explicit consent from users under Article 6(1)(a) GDPR. This ensures a higher standard of protection and enhances user trust, even if consent is not strictly required in all educational or research contexts. In accordance with Articles 13 and 14 GDPR, users will be fully informed of the reason of the data collected, by which means it will be processed, their rights of access, rectification, erasure, objection and the voluntary nature of their participation. Additionally following Article 15 which states “the user has the right to obtain from the controller confirmation as to whether or not personal data concerning here is being processed”. This will be explained at the application, in the booth and by the staff at the booth to ensure the users understand why we are taking this data, for what purpose and for how long.

### 5.2.2 Compliance with the AI Act

Under the AI Act, as stated previously, our system qualifies as a limited-risk AI system. It generates personalized but non-decisional content and does not impact the rights or freedoms of individuals. There are no autonomous decisions made that could affect the user in a legally or significantly meaningful way (see Recital 60 and Article 52(1)). Following the regulations established by the AI act a system like ours must clearly inform users that the avatars are AI-generated, fulfilling the obligation under Article 52(1), ensure human oversight during the process and must not use the user’s input data for any secondary purpose.

### 5.2.3 Educational Context and Exemptions

It is also important to emphasize that this device has been developed and tested within an educational and research framework, which provides certain regulatory flexibilities. According to Recital 12 and Article 2(5)(a) AI Act, AI systems developed exclusively for research purposes may be exempt from full compliance, as long as they do not leave the research context. Similarly, Recital 159 GDPR and national implementations allow for academic research exemptions, provided appropriate safeguards are in place (e.g., pseudonymization, minimization). Nevertheless, our project voluntarily aligns with broader regulatory expectations to facilitate potential real-world deployment—such as at a festival environment—where these exemptions would no longer apply.

## 5.3 Ethical Aspects

Identification of ethical tensions in the implementation; what has been considered to avoid potential issues.

For the deployment of any type of system it is encouraged that it follows good ethical principles to avoid causing harm to any person, entity or the environment. This process is specially relevant in the field of AI since it is a technology that currently shapes many aspects of our daily lives and our interaction as a whole with technology. AI developers are tasked with ensuring that AI systems do not replicate real world biases and discrimination. We have worked to ensure that our AI system is as free of biases and prejudices

to make sure everyone is invited and accepted when using our product.

### 5.3.1 Data Acquisition and User Interaction

Our product requires for the users to interact with the device and for them to provide some data about them to make the system work. The two pieces of information are the results from a form and an image of the attendee. This is the simplest and most streamlined process we have achieved through refinement of many ideas to ensure that.

Whenever accessing the application or taking the picture users will be asked if they want to participate in this process so to inform them that they may opt out. This will be done by either pop-ups, legal text or staff if done in the booth. Also, qualified staff will be at the booth assisting, informing and answering doubts about how the product is designed to be interacted with.

During this process users will be reminded that the data processing complies with the GDPR using their data exclusively for the generation of the Festival Pet and the Personalized Avatar.

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### 5.3.2 Human Rights

To follow good ethical principles we wanted to make sure that our project complied with all the related human rights declared on the Universal Declaration of Human Rights. Following the highest standard makes sure that our project is up to date with the ethical challenges present on our day-to-day.

Everyone will be treated equally, according to Article 10, everyone will be allowed to interact with our booth if they desire so. None shall be subjected to the arbitrary inference of his privacy, following Article 12, this means no one will be forced to interact with our display and shall know what his data is used for. Also very importantly we follow Article 27 where it states that anyone is free to participate in the cultural life of the community and to share scientific advancements and its benefits.

### 5.3.3 Ethical Development

During the development of our product we have always been taking into account the possible biases it may develop. The most concerning case study for the possible biases an AI system might have is the low representation it has of minority groups. This leads to generative algorithms that tend more to generate images of white people instead of black, chinese or other people of other ethnicities and avoids people of old age. In some cases it went as far as whitening the tone of the persons we used to test the model.

To combat this issue we took our base model and made use of fine tuning to show the algorithm different examples of cultures so that in the final product it is more capable of properly representing each of them. The data we used for the fine tuning was a balanced dataset of multiple pictures of different ethnicities and age groups to ensure the final product is more sensitive when generating images. This process allows us to modify the algorithm in a simple and efficient way with more examples to modify its overall end results.

### 5.3.4 Ethical Opinion

During development, we considered public controversies surrounding generative AI, particularly regarding the use of unlicensed training data and the displacement of creative labor. To address these concerns, we ensured that all datasets used for training and fine-tuning were either publicly available or explicitly provided with permission. Additionally, our system is not intended to replace artistic creation, but rather to deliver personalized, large-scale visual outputs that would not be feasible through manual processes alone. This positions the system closer to participatory filters or interactive installations than to traditional creative authorship.

## 6 CONCLUSION

Re:Live Cruïlla was developed as a generative AI system aimed at offering festival-goers a personalized and emotionally resonant souvenir, one that reflects their unique experience and symbolic identity. Through careful design, development, and social impact analysis, we built a system that not only works technically but also engages with important questions around memory, representation, and inclusion. Our work shows that generative AI can enhance cultural experiences in playful and emotionally resonant ways, but only if developed responsibly. By involving diverse actors from different sectors, fine-tuning for fairness, securing informed consent, and being transparent about the symbolic nature of avatars, we aimed to create a system that respects users' identities rather than simplifying or misrepresenting them. Deploying the project within the Cruïlla Festival as a Living Lab will allow us to evaluate the system in a socially embedded, real-world setting and better understand how people respond to AI-generated memories. The feedback will be invaluable, revealing both the potential and the responsibility involved in shaping personal narratives through AI. Looking ahead, Re:Live Cruïlla offers a model for how cultural technology can be innovative, inclusive, and reflective. As AI continues to enter public and creative spaces, this project highlights the importance of designing not just for efficiency, but for meaning, recognition, and human connection.

### 6.1 Digitization

Re:Live Cruïlla reflects how digitization is reshaping cultural experiences. Rather than simply documenting the festival, the system transforms memories into symbolic digital artifacts that extend personal and collective meaning. This kind of digitization is not neutral, it encodes values, choices, and perspectives into how events are remembered. As cultural spaces become increasingly hybrid, it is essential to approach digitization not just as a technical process, but as a social one, capable of reinforcing or challenging norms, and of shaping how we connect with ourselves and others.

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