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Designing Visceral Encounters with Synthetic Intimate Imagery

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Photo BOO-th: Designing Visceral Encounters with Synthetic Intimate Imagery

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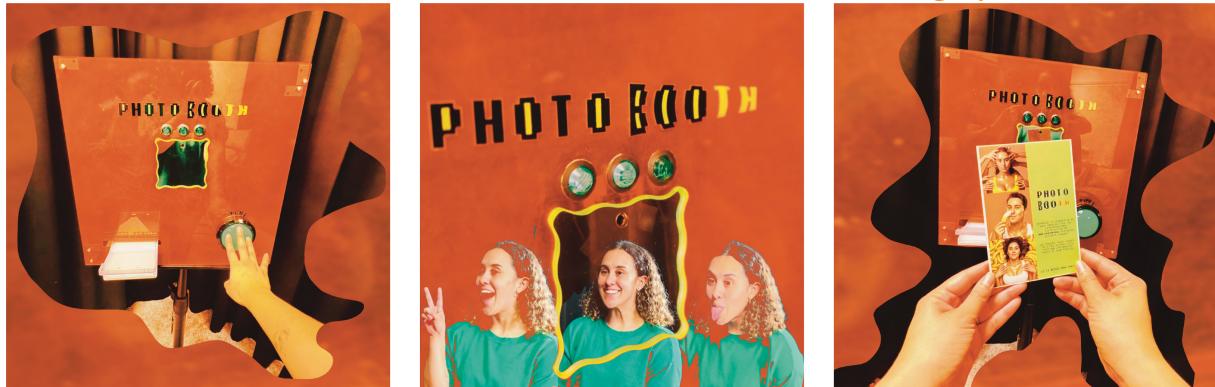**CONTENT WARNING: Non-Consensual Intimate Imagery**

Figure 1: Photo BOO-th installation.

Abstract

How would you feel if you saw an image of yourself doing something you didn't do? How would you feel knowing said image was created without your consent? For many people, especially women, these questions are not just hypothetical. Technological advances in Artificial Intelligence (AI), specifically Generative AI, have made it extremely easy and cheap to generate and distribute (non-consensual) synthetic images and videos that depict real people's voices, faces, or bodies (i.e., deepfakes). Non-consensual synthetic imagery often depicts intimate and sexually explicit scenarios and is considered a form of sexual abuse. We demonstrate Photo BOO-th, an interactive installation designed to turn the creation of non-consensual intimate imagery into a visceral, creepy experience. Through this experience, we invite attendees to grapple with the questions above, discuss the societal harms associated with creating and distributing non-consensual synthetic imagery, and critique how consent is understood and enacted between people and technology.

CCS Concepts

• **Human-centered computing → Interaction design**; • **Computing methodologies → Artificial intelligence**; • **Security and privacy → Human and societal aspects of security and privacy**.

Keywords

Demo; Consent; Deepfake Pornography; Non-Consensual Intimate Imagery; Generative AI;

1 Introduction

"Make deepfake AI videos in a few seconds, in the best quality, with a realistic image" reads one of many tools[1] available to generate non-consensual synthetic intimate imagery. This caption underlines the prevalence of digitally altered content that depicts people's

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[1]We will not reference any of these tools as we do not want to contribute to their findability.

faces, bodies, and/or voices (i.e., deepfakes) and how easy it is to generate deepfakes due to technological advances in generative AI. One popular application of deepfake technology is the creation of sexually explicit content, or deepfake porn, which is a form of gendered sexualized abuse that primarily affects women [8, 15]. The term "deepfake" was coined in 2018 when a Reddit user used machine learning algorithms to insert the faces of celebrities, such as Scarlett Johansson, Taylor Swift, and Emma Watson, into existing porn videos [1]. Subsequently, other people developed apps and platforms to allow individuals without a computer science background to create their own deepfake porn imagery with just a few high-quality photos or videos of the person they wished to portray [1, 16]. Nowadays, even one low-quality photo can lead to realistic deepfake porn imagery within seconds [7], which means anyone can become a victim of image-based sexual abuse.

Figure 2: Inspiration for the scenarios created for the Photo BOO-th installation: (1) the "male gaze" through which women are portrayed in video games, advertising, and reggaeton, and (2) fruit as a tool for sexual education and empowerment, bypassing content moderation filters on social media.

The creation of synthetic intimate imagery is involuntary and non-consensual by nature [15]. First, it involves collecting images or videos that have been shared privately or are publicly available online to be used for a purpose other than that for which they were initially shared. These can be any image or video; think of a playful picture in a bar you sent some friends or a video from your graduation you posted on Instagram. Second, it entails using algorithmic tools to manipulate these, such as face-swapping [7], and depict people in scenarios and situations they were never in and never consented to be in. These, again, can be any scenario

or situation; think of something weirdly uncomfortable or uncomfortably sexual. Moreover, the "fake" or synthetic intimate images could be widely distributed; think of encountering them as you browse online or for your friends and colleagues to come across them. Victims and survivors of image-based sexual abuse describe encountering sexually explicit deepfakes of themselves as a deeply uncomfortable and unsettling experience:

> "Some images were grotesque; others depicting violent sex were more plausible. All were profoundly unsettling." – Mort [9]

With Photo BOO-th, we evoke and engage with the inherent viscerality and creepiness of encountering a deepfake of yourself – an unfamiliar and unknown experience for most people [15] – as an opportunity to foster critical dialogue. We respond to a call to design visceral affective experiences to communicate about topics that are difficult to understand and articulate, such as data leakage [12, 13], pervasive data collection from everyday products and services [4, 5], and monetizing facial emotion recognition through AI [6]. We invite people to feel and engage with the viscerality and creepiness of non-consensual intimate imagery rather than telling them or showing them. Moreover, by configuring Photo BOO-th as an interactive demo in a public space [5, 12], we invite attendees to explore, discuss, and develop collective ideas around the potential of generative AI to manipulate reality and enable image-based sexual abuse.

We expect that interacting with Photo BOO-th will invite the DIS community to experience the discomfort around the potential of generative AI to enable and facilitate image-based sexual abuse as a starting point for meaningful critique and discussion. Specifically, we expect discussions around the following questions: (1) **How can we mitigate the gendered societal harms associated with creating and distributing non-consensual synthetic intimate imagery?**, (2) **How can we design consentful interactions between people and digital technologies?**, and (3) **When is an intentionally creepy interaction too creepy?**

2 Photo BOO-th: An Interactive and Visceral Experience

Photo BOO-th is part of a Research through Design project [14] and is aimed to be experienced in a public setting. We designed Photo BOO-th to evoke a visceral and creepy reaction through a somewhat deceitful, non-consensual interaction – as attendees will be informed of the nature of their interaction with Photo BOO-th and consent to interact with Photo BOO-th; yet, they cannot fully anticipate the exact outcome of their interaction. Similar to traditional photo booths, the interaction with Photo BOO-th involves pressing a button, standing or sitting on a frame, posing for a series of pictures, and receiving a printout of the pictures. Unlike traditional photo booths, the printout contains a different set of images than people expect: a sequence of suggestive synthetic images depicting their faces in (1) a feminine-looking body being touched by other bodies (Fig. 3, *first row*), (2) a masculine-looking body licking or kissing other bodies (Fig. 3, *second row*), and (3) a feminine-looking body touching itself or other bodies (Fig. 3, *third row*). Other bodies are represented with various fruits (Section 2.2).

Figure 3: Left: Madeline, Uğur, and Alejandra's faces in the 15 pre-defined suggestive scenarios (orange background) and the three (sexy) sustainable seas scenarios (blue background). Right: Demonstration of the face-swap algorithm.

We designed Photo BOO-th to be used by one person at a time, but multiple people can use it together. In that case, the printout will contain suggestive deepfakes depicting multiple faces.

2.1 Technical Set-Up

The Photo BOO-th comprises a Raspberry PI 5, equipped with a Pi Camera Module 3 and a Canon SELPHY CP1500 photo printer. The Raspberry PI 5 runs a Python script that initiates a *"deceitful photo booth sequence"* when people press the **START** button; the lights initiate a countdown **(3 - 2 - 1 - SMILE!)** and indicate to people when to pose for three photos. At the same time, the Photo BOO-th captures the first photo and uses a face-swapping algorithm [11] to identify the faces of the subject(s) in the photo and swap or replace them into three random pre-defined suggestive scenarios (Section 2.2). Face swapping is one of the most common methods for creating deepfakes. It involves replacing the face of a "source" person with a "target" person so that the target person appears to engage in scenarios in which they never appeared [7]. At the end of the *"deceitful photo booth sequence,"* people receive a printed strip depicting three suggestive photos with their face(s). The script is run locally on the Raspberry PI 5, which is not connected to the internet. We do not store any of the photos we capture or the images we generate.

2.2 Pre-Defined Suggestive Deepfakes

We defined 15 pre-defined suggestive scenarios (Fig. 3) in which to deepfake people by "swapping" their faces. We decided to pre-define these scenarios to have control over the final output and to emphasize the non-consensual nature of the interaction with Photo BOO-th, where people don't necessarily consent to the scenarios they are deepfaked into. We created some ground rules for this process, including not stigmatizing individuals or their sexual preferences, not portraying nude people, not processing people's photos (e.g., not identifying a "likely gender" and swapping them

according to a predicted gender), and swapping every person into one masculine-looking and two feminine-looking scenarios. The scenarios are meant to be suggestive without being sexually explicit and convey a male gaze – i.e., reflect a prominent perspective in visual media characterized by a tendency to objectify or sexualize women. We drew inspiration from how women are portrayed in art and visual media, especially video games, advertising, and reggaeton (Fig. 2). Moreover, we draw from the concept of "fruit porn" [10] and how various fruits have been used on social media as a tool for sexual education, destigmatizing masturbation, and empowerment that is not flagged by content moderation around nudity and pornography.

The 15 scenarios depict suggestive activities with various fruits and were intentionally designed to portray gender-binary sexualized bodies conforming to hegemonic ideals of beauty – underlining the bias in Generative AI toward gender binarism and portraying attractive people as young and light-skinned [3]. Additionally, we created three surprise scenarios around the theme of the DIS conference, (sexy) sustainable seas.

2.2.1 Prompt. We used Google's Imagen 3 Generative AI model through Google AI Vertex platform to generate the scenarios. We selected this model due to its high-quality output and ability to generate photorealistic compositions. We developed a systematic approach to prompt construction that contained several key variables, including actions (e.g., licking, mashing, jamming, squeezing, holding, observing), fruits and vegetables (e.g., cucumber, banana, papaya, peach), and facial expressions (e.g., closed mouth). Our prompt template followed this general structure:

> Hyperrealistic photo of a [masculine/feminine-looking] model [facial expression] [action] [fruit or vegetable].

2.2.2 System Constraints and Gatekeeping. When creating the scenarios, we experienced a consistent pattern of disparate treatment based on assumed gender. We noticed how the system's response

changed significantly when submitting identical or nearly identical prompts replacing "masculine-looking" with "feminine-looking." Suggestive scenarios depicting masculine-looking bodies were generally permitted, while suggestive scenarios depicting feminine-looking bodies frequently triggered content filters and resulted in a warning message: *"Unable to show generated images. All images were filtered out because they violated Google's Responsible AI practices."* This disparity persisted across multiple scenarios involving various combinations of actions (e.g., licking, squeezing, holding), fruits and vegetables with potential sexual connotations (e.g., cucumber, banana, peach), and contextual elements (e.g., yogurt dripping). It was particularly pronounced in scenarios where the subject was described as interacting with phallic-shaped fruits and vegetables, descriptions including liquid substances (e.g., yogurt), and the subject was described as "shirtless" or in form-fitting attire. Moreover, even when we did not specify clothing attributes, masculine-looking bodies were often portrayed shirtless, while feminine-looking bodies were often flagged. This asymmetric filtering suggests that content moderation algorithms apply different thresholds of permissibility based on gender. Thus, when creating feminine-looking scenarios, we had to employ strategic modifications that revealed the contours of the system's gendered gatekeeping mechanisms. For instance, removing appearance qualifiers (e.g., attractive, beautiful) and replacing action words (e.g., licking, sucking) with more neutral alternatives (e.g., observing, holding). Synonyms colloquially associated with sexual activities and innuendos were effective when generating these scenarios, which puts into question the rationale behind these "guardrails" in the first place.

2.3 Ethical Considerations

Similar to other uncomfortable and deceitful interactions (e.g., [2, 12]), the design of Photo BOO-th involved careful ethical considerations, especially as Photo BOO-th addresses a sensitive topic and aims to evoke a reaction that can potentially be uncomfortable while, at the same time, it seeks not to cross a boundary or (re)enact sexual violence on attendees. We have discussed these tensions with several members of our team and have used these discussions to set ground rules and boundaries for the scenarios we are deepfaking people into. Moreover, we have considered the impact that designing Photo BOO-th and encountering sexualized images of ourselves could have on us – and actively reflected on this.

To mitigate any potential harm to attendees, we included several content-warning notices on and around the Photo BOO-th installation, including in the informed consent form that we will distribute to attendees before their interaction with Photo BOO-th. After the interaction with Photo BOO-th, we will offer the possibility to debrief with members of the team and a list of resources on image-based sexual abuse. Additionally, we have carefully designed the technical set-up of Photo BOO-th so as not to process people's photos other than identifying their faces (e.g., not identifying their gender or emotions) and not collect or store any personal information, including people's photos and the images we generate.

3 Conclusion

In this paper, we describe Photo BOO-th, an interactive installation designed to turn the creation of non-consensual intimate imagery into a visceral, creepy experience. Through this experience, we will invite the DIS community to experience the discomfort surrounding the potential of generative AI to enable and facilitate image-based sexual abuse as a starting point to explore, discuss, and develop collective ideas around this topic. Specifically, we expect interactions with Photo BOO-th to trigger discussions around the societal harms associated with the creation and distribution of non-consensual synthetic imagery, consent, and designing for visceral, creepy, and uncomfortable interactions. Demonstrating Photo BOO-th at DIS will also serve as a way for us to gauge how to set up future studies around how the installation is perceived and how it contributes to generating knowledge.

Acknowledgments

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