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Applied Cuteness Research

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MASTER OF FINE ARTS

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by

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Abstract

Applied Cuteness Research

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Applied Cuteness Research (ACR) is a multimedia virtual reality installation where audiences can play with an artificially generated entity called cutie through embodied interaction. Anyone who enters the space is invited to “hug cuties in virtual reality.” ACR consists of a social gathering space and a VR experience that encourages audiences to observe and interact during the exhibit. This work offers an interdisciplinary approach to researching art and technology. It captures a snapshot of our current moral and social aptitudes that can serve as freeze frame of our attitudes toward technology for future reference by practitioners in any field.

Acknowledgments

Thank you to my committee chair Elizabeth Swensen, and committee members Yolande Harris, Karlton Hester, and Katherine Isbister for their unwavering support of cuteness research over the last year. A special shout out to my cuteness factor research collaborator Chen Ji for all the hours we spent together trying to figure out *what makes it cute?*, Samir Ghosh for the cute code assists, all the friends and classmates who took the time to playtest early cuties or share their own cute ideas and insights, plus the members of the SET Lab in the Computational Media department for welcoming me and showing me the ropes in HCI. Thank you to Gray Crawford for his hand tracking and physics design wizardry.

Being full of power
is like being a baby.
Scorpions don't sting,
tigers don't attack,
eagles don't strike.
Soft bones, weak muscles,
but a firm grasp.

Tao Te Ching, Lao Tzu
trans. Ursula K. Le Guin

I. Introduction

A. Background

Cuteness the pleaser, the weapon. Cuteness in its round, sweet, pliable naivety wields a soft power that can comfort, coddle, or charm its beholder. A growing body of research has framed cuteness variously as an emotion, socializer, popular aesthetic, cultural framework, and fetish commodity. Cuteness is difficult to pinpoint, yet easy to observe. People make time to play with babies at the grocery store; friends share TikToks of cute baby animals with one another. Consumer products use cute anthropomorphic mascots and colorful packaging to attract the attention of customers. Some actively seek out cute experiences to elicit pleasure or cope with difficult situations. During the early lockdowns of the COVID-19 pandemic, people escaped to cute virtual islands to spend time with friends in the video game Animal Crossing[1]. Cuteness has a way of reproducing itself. When the inventor of the world wide web Tim Berners-Lee was asked to name one thing he never thought the internet would be used for, his response was simply: "Kittens"[2].Whether with positive- or ill-intent, instrumentalized cuteness

alters our emotions and behavior. In the field of Human-Computer Interaction (HCI), cuteness has been applied to the design of friendlier robots[3] and more approachable user interfaces for children[4]. Cuteness has woven itself into the social, emotional and aesthetic fabric of our contemporary technological milieu. Cultural theorist Sianne Ngai describes cuteness as the aesthetic that seems “best suited for the analysis of art” due to its dialectical relation with popular and commodity culture[5]. As cute aesthetics continue to proliferate in technological spaces, I propose cute technology as an analytical mode in my work.

B. Overview of Applied Cuteness Research (ACR)

Fig 1. Installation view.

Applied Cuteness Research (ACR) is a multimedia virtual reality installation where audiences can play with an artificially generated entity called cutie through embodied interaction. Anyone who enters the space is invited to “hug cuties in virtual reality.” ACR

consists of a social gathering space and a VR experience which are divided spatially as sitting and play area. The sitting area is intentionally arranged to feel like an informal living room space to encourage audiences to observe and interact during the exhibit.

Donning the VR headset reveals: a lone, pastel-colored cutie in a bubble-like sphere bobs slowly toward you amidst from the infinite pink-gray gradient until it seems to pause, just out of reach. Though perceivable as an entity, cutie lacks definitive features. Its shape consists simply of two spherical appendages attached to a larger sphere. The only instruction you have received is that you can reach out to touch, pet, or hug cutie. As you discover ways to interact with cutie, you also find your bearings in this new hybrid environment.

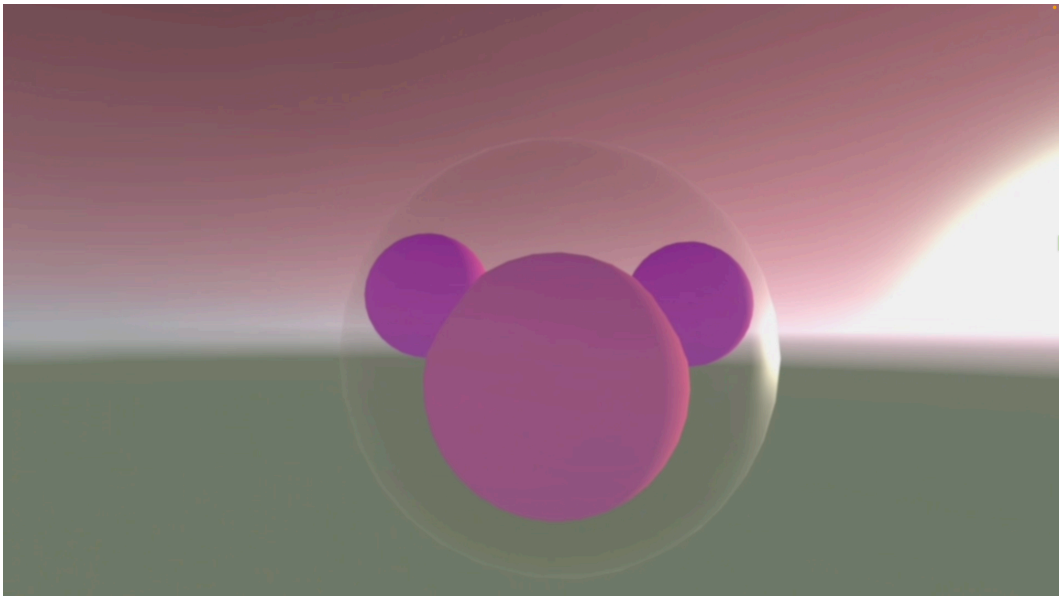

Fig 2. Cutie in headset view.

The creation of cutie is informed in part by my previous research “The Cuteness Factor: An Interpretive Framework for Artists, Designers and Engineers” on the application of

cute aesthetics and style to the design of interactive systems[6], completed in collaboration with my co-author Chen Ji and PhD researchers at the SET Lab in the Computational Media Department at UCSC.

C. Motivations

My motivation for researching cuteness and technology comes out of my interest in the aesthetics of technology as an artist and user experience designer. In the course of work, I synthesized knowledge from cuteness studies, game studies, and HCI design to create a culturally situated simulacra for thinking about technology. A feature of this artistic work is that its outcomes are imprecise and open for (re)interpretation. My goal was not to reach a definitive conclusion about the ethics of technology, or even to create the cutest virtual entity possible. And though concerns about the widening digital divide — exacerbated by self-reinforcing discrimination based on race, class, and first world attitudes towards the global South — are front of mind for me as an artist working primarily with emerging technologies, neither am I proposing solutions for addressing these inequities. Rather, I intend for ACR to exist as a sort of artistic staging ground for investigating the moral nuances of nascent technologies before its forms and functions are fully codified. This work has in particular been inspired to consider technology at scale by Achille Mbembe's planetary thinking, which calls for new ways to critique and describe the complexities of human and technological entanglements[7], and Ursula Franklin's emphasis on the technological structuring of knowledge, work, and the future[8]. I scaffold these frameworks to explore the question of ethical technology as an ongoing technical *and social* project that requires a more expansive,

participatory approach to knowledge and archive building than our present-day systems afford, and that cuteness, as a familiar, can lead the way.

D. Approach

I offered audiences the following prompts as part of the installation:

Who is cutie?

Why was cutie made?

Is cutie my friend?

How does cuteness change how I feel about technology?

When I interact with technology, who has agency?

Does technology live to serve?

Who decides?

As audiences engaged with cutie over the course of the exhibit, it became clearer to me that the social and emotional contexts of these interactions revealed salient insights about how we think about and deal with technology. A common criticism heard in the computational approaches to technology is that the methods of research used were 'lacking rigor'. It is my opinion that this is often shorthand for '*these results lack the standard quantifiable logics recognized by practitioners in this field*'. While this level of critique is often valid in context of particular scopes of research, I believe this stance limits the breadth of possible discourse to the detriment of the domain and anyone who deals with technologies in general.

In that regard, I offer this work as a snapshot of our current moral and social aptitudes. This contribution is a freeze frame of our attitudes toward technology for future reference by practitioners in any field. The next pages will provide more context for the framing of my work; I will survey the soft sciences approach to cuteness as it pertains to ACR, discuss the question of who or what is considered in our moral circles, and elaborate on the process of “weaponizing” cute technology for reflection. In the latter half of this thesis I will focus on documenting the work by including photographs, screen captures, and anecdotal observations from my perspective as an artist, designer, and technologist.

II. The Soft Science of Cuteness

A. The universality of aww

The quality of cuteness can be described as something “attractive or pretty especially in a childish, youthful, or delicate way”[9]. While the meaning of “cute” has arrived at a rough global convergence in recent decades[10], I find it relevant that the unique semantic origins of the word in countries where cuteness is a dominant cultural force have resulted in subtle, yet notable nuances in their respective attitudes toward cuteness. In English, the definition of *cute* was originally derived from the word ‘acute’ in the 18th century to mean something that was ‘sharp or clever’. Its meaning diverged in the 19th century as American slang to describe something ‘attractive, pretty, charming’[11]. On the other hand *kawaii* (かわいい), the Japanese approximate for cute, came from classical literature and described something with a pitiable or embarrassing quality[12]. Then there is the Mandarin *kě·ài* (可愛) which translated literally means ‘[that which] is lovable’ and whose original meaning is closer to the word ‘respectable’[13]. It is interesting to note that these East Asian concepts of cuteness lack the American undertones of deceit which Sianne Ngai describes as experiencing “a second feeling of manipulation or exploitation”[5].

My cuteness research began with an inquiry into the semantics of cuteness, with a text-based virtual pet simulator called *cute pet*[Fig. 3]. This project explored the semantics of aesthetic styles through written interactions with virtual pets. In this simulation, players could perform a set of caretaking actions, and based on their assigned

personality types {cute, cool, evil}, the pets would respond with texts populated from a semantic graph of associated words from a user-generated network called ConceptNet.

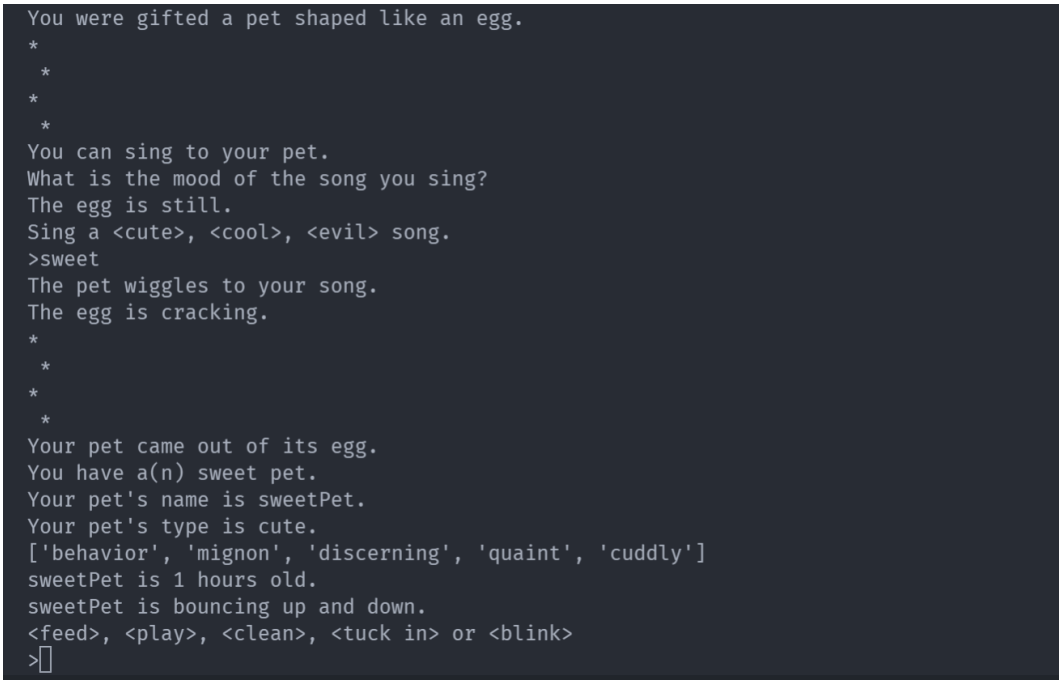

Fig 3. *cute pet*, 2021.

Another aspect of cuteness comes from our biological response to the perception of baby-like features. The effects of this response on human behavior and decision making has been examined by psychologists who found that cuteness can elicit caretaking motivations in adults[14], and that cute images of babies and animals increased attentional spans in children[15].

While most research on cuteness focuses on our affective responses to these baby features, I am more interested in the social theories of cuteness as it applies to how we "mentalize" technology and non-human entities. Mentalizing is a process through which one attributes a thinking, intending mind to an entity[16]. This process can apply to

non-human as well as non-living entities, even when we are aware that these entities are not 'thinking' in the sense that we do. Hiroshi Nittono takes another social approach to cuteness by introducing *kawaii* and its culturally uniquely contexts to analyze the role of cuteness as a social value in addition to its affect[17]. Building off Sherman et al.'s argument that cuteness can be better understood as "a mechanism that 'releases' sociality" and elicits moral emotion through a mentalizing process[16], I stage audience encounters with technology to weaponize cutie as a mentalizer. In this case, weaponization is not an inherently violent act. Rather, it is a mental trigger, one that asks audiences to consider their own mental processes when they engage with technology, and their unique relationship to technology. When we mentalize cutie, and attribute agency to technology, might they become eligible for consideration within our moral circles[18]?

B. Cuteness and digital media

The reach of cuteness in online and digital spaces as a aesthetic, a social driver, and a cultural object makes it a useful site for considering the conditions of technology as they emerge. Cuteness is prevalent in digital media as both an affect and aesthetic, and can be found modes of communication such as emoji, kaomoji, and memes, as well as an element of style in user interface and media design. The prevalence cuteness in media may be a direct response to the perceived dehumanizing aspects of digital technology, or a desublimation "where basic emotional drives are appealed to in an increasingly direct manner", as an outcome of limited attention and accelerating speeds in life mediated by technology. As a site for understanding technology, cuteness can be useful as an aesthetic judgement that most people are familiar with. My

hypothesis is that cuteness, as a founding category in an expanding universe of new online aesthetics[1], can serve as a guiding familiar to help us understand the emergent moral and social dynamics of technology.

C. Design ethics

> And what seems extraordinary to me is that these media images have so permeated every facet of life that they are no longer perceived as external intrusions or as pseudorealities ... and only professionals and academics discuss these images. There is no common discourse about how the images were formed, how they were gathered, how they got into our living rooms.
>
> Ursula Franklin, The Real World of Technology

When applied to image and technology objects, cuteness has the capacity to both please and weaponize. Cuteness has classically been deployed by tech companies to shape our perception of their products[19]. In recent years, many tech companies have undergone *sans-serification*, converging on hyper-simplified, child-like aesthetics in their logo marks and design. In the words of the designers responsible for Google's updated aesthetic, the intent was to retain the “simple, friendly, and approachable style” of the company by introducing a “childlike simplicity” to the brand’s visual form.

The increasing complexity of technological systems and the post-modern desire for simple[20] and user-friendly design means that the appearance of technology often does not reveal its underlying functions or complexities[21]. A common philosophy in product design is *don’t make the user think*[22]. In my work as a user experience designer, I often

[1] Online aesthetics bear little resemblance to aesthetics in the classical sense. This community-generated wiki provides a perspective of this emergent aesthetic modes: https://aesthetics.fandom.com/wiki/List_of_Aesthetics

grapple with the challenge of designing experiences that are accessible and understandable, while also being transparent of intent, and indicative of function.

In HCI and game design, there is the idea that design affordances define the range of actions available to a "user" or "player" in a defined interaction or game space. When I create an immersive world inhabited by cutie, affordance design also becomes universe design, in a sense. Technology literacy is an important factor in design ethics. For people with lower technology literacy, the rift between the representation of technology and its function can make access to complex technologies easier. At the same time, this rift can cause harm by for example, manipulating the emotions of a user to influence their decision making, or obfuscating data collection or surveillance processes. Cutie balances the same rifts and design considerations made by tech companies like Google or Meta to interrogate the value and functions of its own cuteness. As friendliness and corner radii in software design continue on a rounding trajectory, the technological world seems primed to converge on circles, just like cutie.

D. Cuteness in Art

A survey of cuteness in art through history offers another perspective on the human experience of cuteness. Cute qualities can be found in examples of work such as the cherubic faces of angels perched in Raphael's *Sistine Madonna*[Fig. 4], in an ukiyo-e print of a

Fig 4. Close-up of cherubs in Raphael's *Sistine* Madonna, 1512-13.

Fig 5. Utagawa Kunimasa, *Woman, Cat, and Kotatsu*, 1796.

Fig 6. *Round Bamboo-Veneered Curio Box with Lotus Blossom Decor*, Qianlong reign, Qing dynasty, 1736-1795.

woman admiring a curled up cat[Fig. 5], and in the diminutive replicas of scrolls, artworks, and objects found in the toy-sized sculptures and curio boxes of the Qing Dynasty courts[Fig. 6]. Each point to aspects of cuteness such as our biological response to babies, our adoration of baby animals, and cuteness as an objectifier and commodifier in the form of diminutive collectibles. The National Palace Museum in Taipei has augmented the cuteness of some art objects in their collection by translating them into digital artifacts for the video game *Animal Crossing*[Fig. 7]. The artist Takashi Murakami's body of contemporary works are an amalgamation of cultural references that instrumentalize many qualities of cuteness by using bright, graphic, and appealing styles of Japanese arts and pop culture to create its appeal. His character Mr. DOB (1993) has a deranged

yet cute aesthetic that echoes Mickey Mouse in both appearance and in its position as a commodity pop culture object. Like Mickey Mr. DOB is sometimes depicted with a body, but often exists solely as a disembodied head. Murakami has expressed that he utilizes the culture of manga and kawaii that emerged out of postwar Japan[23] in order to create works that are relatable for non-artistic people. When creating cutie with the idea of cute primitives in mind, I inadvertently arrived at the elemental visual convergence of floating spheres found in the design of cute characters such as Mr. DOB, Mickey Mouse, and Kirby.

Fig 7. *Jadeite Cabbage*, Qing dynasty, 1644-1911, recreated as a pattern in the video game *Animal Crossing*, 2020.

III. The Virtual Reality Experience

A. Meet Cutie

Cutie appears in front of the player, floating in a transparent bubble; this provides a practical explanation for why cutie seems to appear out of nowhere. The materiality of the bubble and cute aesthetics invite the player to interact with this mysterious entity. The rest is open ended. The key aspects of this encounter are that the core mechanic is hugging, and the experience itself is a provocation for the player to consider their own moral and agentic relationship to technology.

Fig 8. A playtest of the first cutie prototype.

B. Installation space

The physical installation is located in the graduate lab on the first floor of the DARC building. It is divided into a sitting area open to an adjacent play area for the virtual reality experience. The sitting area consists of two couches facing a TV broadcasting a live feed of the VR experience, as seen by whoever is engaging in the virtual reality

Fig 9. View from the hallway.

experience. The play area is large enough accommodate a single player and a range of physical movements that allow them to engage with cuties through embodied interaction. Two sides of the installation consist of windows, which offers a preview of the work for passerby from both inside and outside of the building. The remaining sides of the installation are demarcated by gradient pink-gray curtains that hang from the ceiling and continue down to the gray concrete floor. The play area is minimalist and contains a virtual headset on a small table under-lit with soft pink ambient lighting.

C. Design of cutie

It began with a sphere. Cutie's form comes out of the inquiry “what makes it cute?” that I have been pursuing in a series of digital arts pieces and HCI research over the last two years. In prior work[6] Chen and I outlined a process for identifying cute aesthetic factors that could then be translated into a library of cute building blocks. The design of cutie

and the virtual environments uses those same basic elements, including a round shape, a simple form and pastel colors.

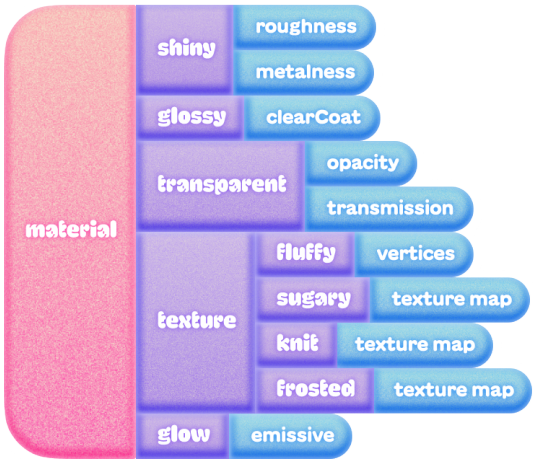

Fig 10. Cute Building Blocks[6]

Early iterations of cutie already had the core visual element of a simple, pastel-colored body. I aimed to create an archetypal sense of cuteness by using basic, glossy and transparent materials in lieu of many styles that we identified during our building blocks research — textures such as fluffy, sugary, or knit — to avoid evoking particular associations with creatures or commodity products. This solo cutie could be hugged, petted, yeeted and recalled to appear in front of the player if accidentally or intentionally flung away. This simple form and set of possible interactions were enough to elicit awws and cute responses from the audience. Another feature allowed cutie to be recalled in front of the player over and over again with a programmed hand gesture[Fig. 11]. This raised questions around cutie's agency or a lack of which inspired my later attempts to design a more agentic cutie that encouraged players to compromise and make adjustment their behaviors in order to interact with cutie.

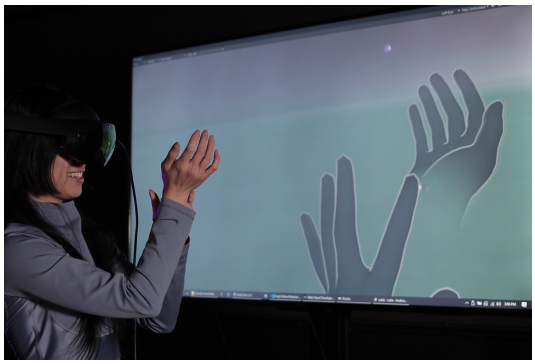
Fig 11. The reset cutie hand gesture.

In later iterations, cutie began to multiply when hugged. New cuties in pink, purple, and teal seemed to join cutie when the player performed the kinder, gentler action of hugging. Cuties began to disappear permanently when they were treated too roughly and flung away. I also introduced sound as a dimension of cutie's being.

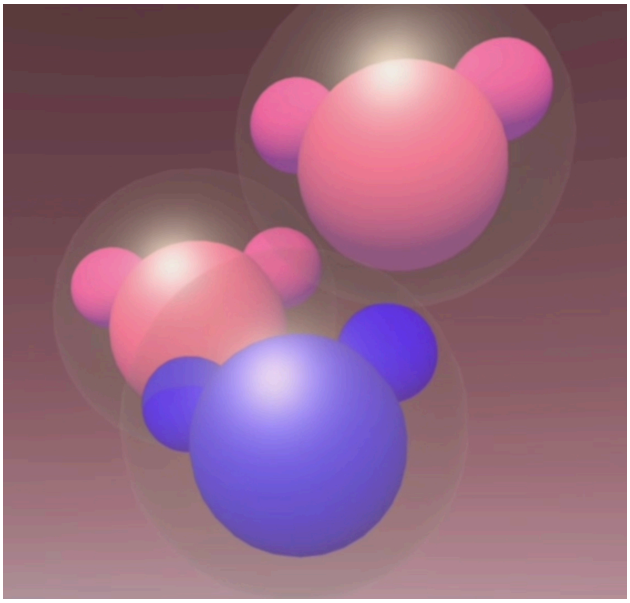

Fig 12. Cuties reproduce when hugged.

A friend and I recorded vocal samples inspired by the calls of small creatures[2]. These samples were assigned to cutie as particular responses for being hugged, pet or yeeted, and randomized for pitch, echo, and volume each time the sounds were activated.

[2] One example of small creature sounds is the call of the pika, which I have encountered on my hikes in U.S. National Parks. Here is a video of an exceptionally cute baby pika: https://www.tiktok.com/@hshyfh0810/video/6664389295735950597

D. Interacting with cutie

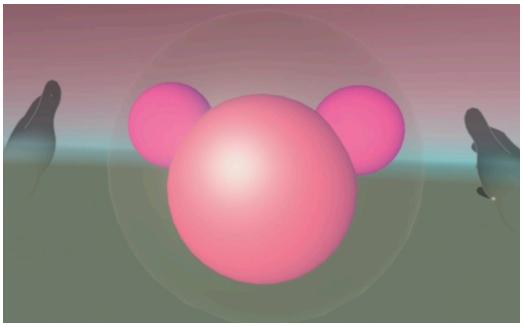

Fig 13. Cutie is not being hugged.

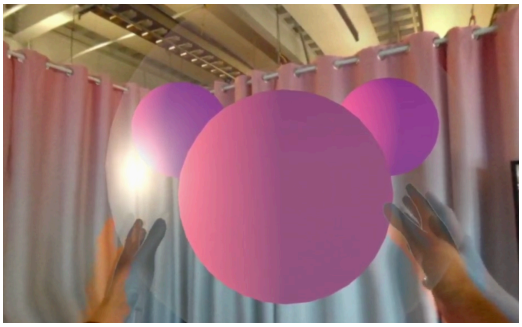

Fig 14. Cutie is being hugged.

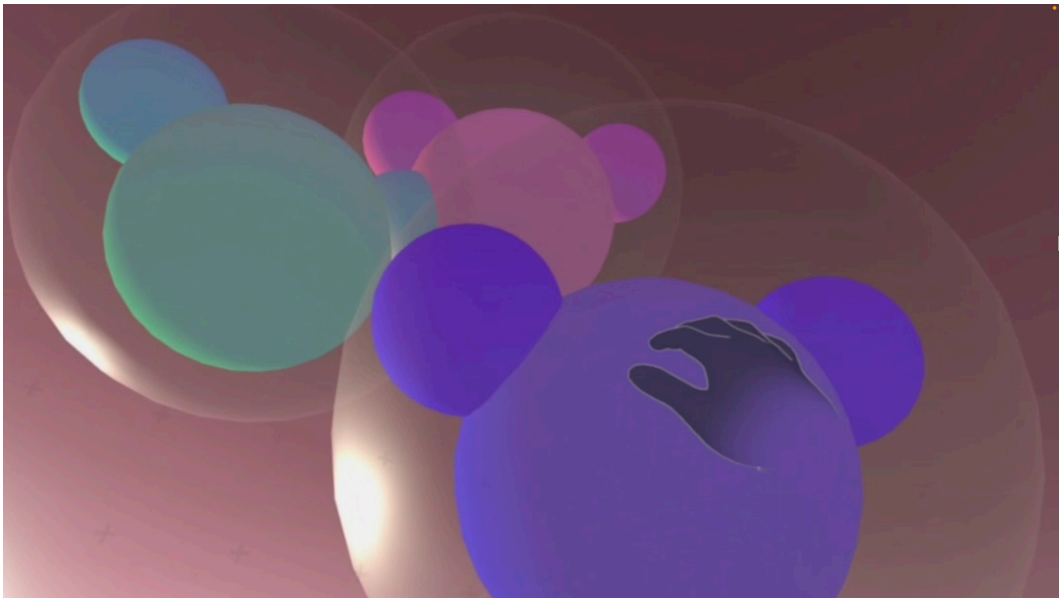

Fig 15. Petting interaction.

At first, cutie was a static entity that only moved when force was applied. After establishing cutie's form, I began to investigate the use of motion and sound to evoke feelings of cuteness. This direction came out of a decision to avoid definable facial features and instead focus on the types of social interactions that could happen between cutie and the player. This choice leaves the nature of cutie's being open for interpretation.

The embodied and emotional design of cutie takes cutes from Katherine Isbister's *How Games Move Us: Emotion by Design*, which outlines ways in which movement design can have an impact on our emotions and perceptions during gameplay[24]. Cutie is an experience designed to put place your body in unexpected physical configurations with a virtual entity. The available interactions: hugging, touching, and petting encourage physical 'contact' in a way that quite literally closes the distance between you and cutie. The simplicity of cutie's interaction design puts the focus on the physical relation of your body to cutie's body across virtual and real space.

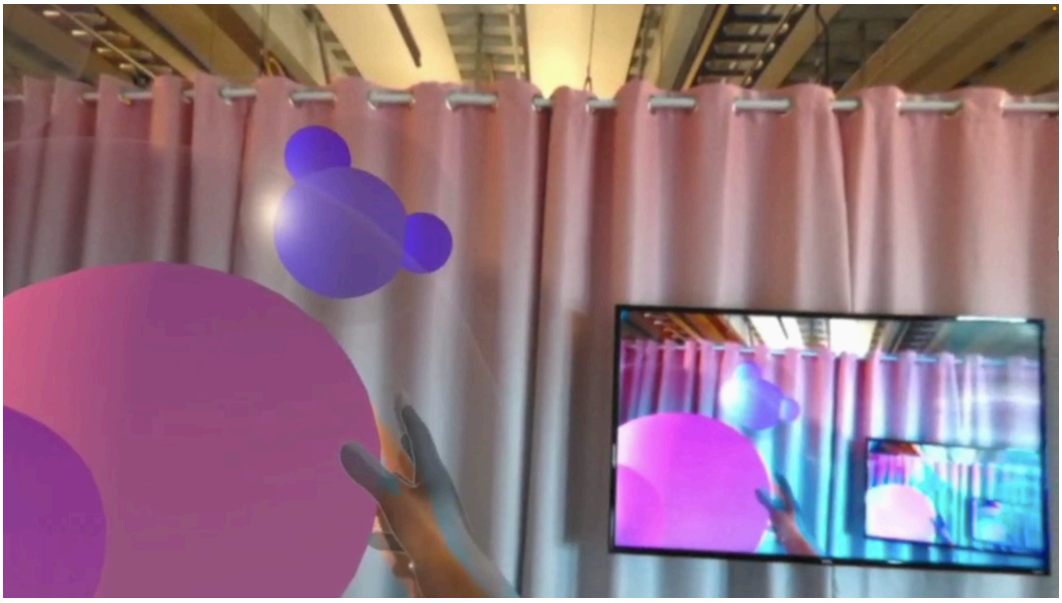

Fig 16. Passthrough mode displayed on the TV in the installation space.

Even though cutie makes use of the same collision mechanics as a first-person shooter, its hugging, touching, and petting collisions are tuned to mimic gentle, care-based interactions instead. The embodied performance of these actions can activate mirror neurons for caring in the player and audience. For some, the physical act of hugging and

touching cutie while seeing its virtual body had a proprioceptive effect, and some people experienced a warm or electric energy.

Another aspect of interacting with cutie was the design of the physical installation space. In the exhibit, the sitting and play areas are intentionally left open to encourage interactions between the player, their friends, groups, strangers, members of the cohort, and random passerby. This made it possible to spread feelings about and toward cutie through emotional contagion, when "our brains seem to simulate what the other person is doing *and* feeling" so that we experience others' actions and reactions in our own minds[24]. The porousness of the sitting and play areas meant that audiences were able to influence each others' emotions and feelings towards cutie through comments and peer pressure, making the negotiation of attitudes toward cutie and its technology a social activity.

E. Perceptions of cutie

These accounts of how audiences engaged with cuteness and technology in my work come out of my own informal observations and conversations with audiences as the docent of the installation over the course of the week-long exhibition. Audiences were also invited to leave messages about their experience in a physical guest book in the sitting area.

The following are my loose collection of notes about how audiences perceived and interacted with cutie.

Some questions asked by the audience included:

Do different colored cuties have different personalities?

Is cutie a molecule? Or an alien?

When did the other cuties show up?

Is cutie responding to my interactions?

At what level of fidelity does cutie start to feel like an agent rather than an object?

Audiences mentalized cutie and were generous about cutie's capacity for agency.

In reality, cutie's interactions consisted of a few simple interaction loops:

- cutie bobbles when idling
- cutie replicates itself when hugged
- cutie moves when force is applied to it
- cutie springs back into its original position when force is removed
- cutie rotates its orientation so its "front" faces the player
- cutie moves to be within a certain radius of the player
- cutie flies away (gets yeeted) when too much force is applied to it
- cutie makes sounds with slightly randomized parameters upon being hugged, petted or yeeted

While ACR was a created as an open-ended experience in order to invite reflection over achievement, an interesting outcome was that in the absence of goals, players ended up inventing their own goals or modes of interacting, and often stated out loud that they were doing so. Cutie's design and round shape seemed to afford either caring or sports-like interactions:

- Playing with cutie like a creature
  - Tickling
  - Petting
  - Scratching
- Gathering swarms of cutie
- Caring for cutie like a baby
- Observing cutie like an anthropologist
- Sports mode: basketball, volleyball, tai chi

Fig 17. Modes of playing with cutie.

F. Notes from the Guest Book

I feel bad I wasn't nicer to them.

It was nice that they liked gentle touch.

It was fun exploring what reactions to different touches would be elicited.

This experience is incredibly accessible and I think it is a great way to introduce people to virtual reality.

I wanted to punch them and hug them.

Soooo huggable.

I am sorry to say I discovered industrial farming :(

The sounds were the cutest aspect :)

I was always somewhat concerned or saddened when they left.

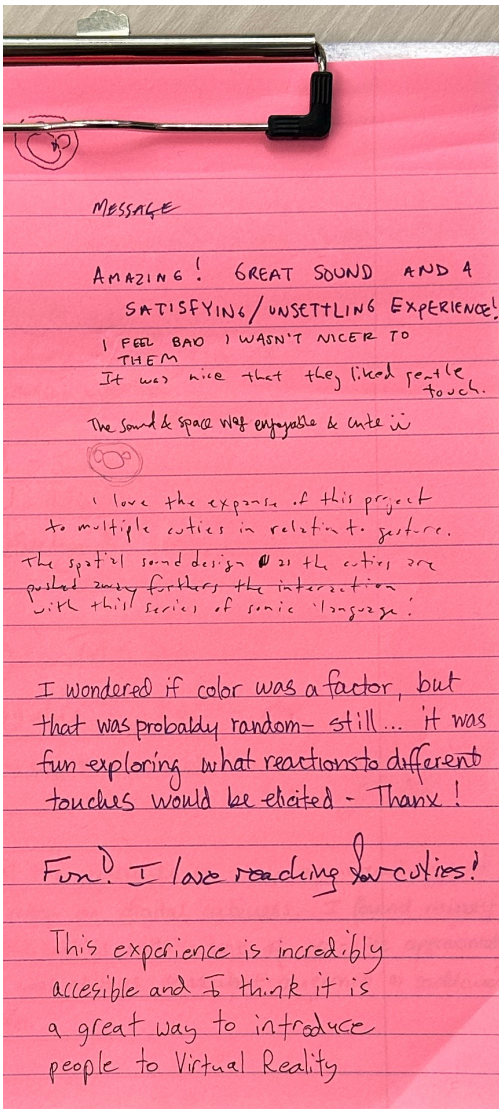

Fig 18. Guest Book.

IV. Reflection and Future Research

This thesis reflects my initial exploration of cute technology as a site for critical thinking on technological ethics. One of my favorite aspects of creating interactive works is that people like to tell you what they would like to see next. Having facilitated ACR over the course of its two week exhibition, I believe my interdisciplinary practice was successful in its goal of facilitating accessible discourse on how we think about and use technology. Armed with audience feedback and new ideas, I intend to continue my research in ACR. I have started to consider what other forms this work might take. How can I reach more people with ACR? For example, what would ACR look like as video game, where players are given goals? What would cutie look like given a material form in the physical world? What other aspects of cutie can be evoked through the exploration of sound? What kind of world do they come from? What else can they teach us about technology?

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