What unique qualities or traits do you feel define you as a human (not a machine)?

human?

Do you have a name?
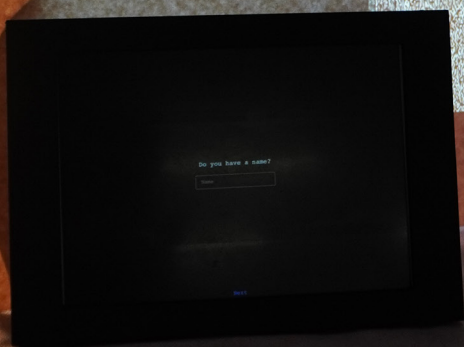
What makes us human?
by
Jade Hyeryeong Kim

In an era where artificial intelligence increasingly blurs the
line between human and machine, this research explores the
fundamental essence of what it means to be human. While
beginning with practical challenges like telephone fraud
and authentication systems, this work extends beyond to
probe deeper philosophical questions about human nature,
demonstrating how design methodologies can address not
only wicked problems but also fundamental questions.

This research shows how designers can provide alterna-
tive perspectives and approaches to addressing challenges
within technical spaces. By utilizing speculative design
artifacts, it aims to imagine and provoke discussions around
future scenarios, fostering critical engagement with the
intersection of technology, design, and human agency.

This research explores two critical, interconnected themes: mitigating the immediate threat of telephone fraud and examining the broader philosophical question of human identity in an AI-driven world. Combining digital security, speculative design, various disciplines such as cognitive science and philosophy, it employs a design approach to address both practical challenges and theoretical inquiries.

Telephone fraud, which exploits emotional vulnerabilities and advanced AI technologies like voice synthesis, remains a pervasive issue. Existing solutions fail to provide real-time, scenario-based prevention, leaving vulnerable populations, susceptible. This research develops three innovative solutions: a community-based alert system for digital solidarity, biometric authentication protocols for secure communication, and shared memory authentication rooted in personal relationships. These systems aim to empower users by blending technical feasibility with human-centric design principles.

The second focus of this work investigates **uniquely human characteristics** in an age of increasingly intelligent machines. The user research highlights that the hypothetical qualities defining our humanness—emotional complexity, personal and collective lived experiences, ineffable embodied souls, and our inefficiencies and unpredictability. Participants in diary studies emphasized these qualities as deeply human experiences that machines struggle to replicate authentically.

The outcomes of this research are an iterative experience of testing one's own humanness. It reframes the Turing Test for the AI age, proposing a reverse approach: identifying human qualities on a spectrum rather than detecting machine efficiency through binary answers. It challenges the efficiency-driven paradigm of AI development, advocating for a design philosophy that prioritizes human authenticity. At the same time, the findings contribute to broader discussions about the human-machine distinction, questioning the rationale and necessity behind it, and whether traits like inefficiency and emotionality could one day emerge in machines.

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Faculty Director Signature and Date

Associate Director Signature and Date

Introduction

The rapid advancement of artificial intelligence (AI) has reshaped interactions, prompting questions about human identity and authenticity. This research begins with the specific issue of telephone fraud and expands to examine humanity's distinct traits in an AI-driven world, proposing design interventions while interrogating the human-machine distinction.

Telephone fraud, including phishing and vishing scams, exploits emotional vulnerabilities and advanced voice synthesis. According to the Federal Trade Commission (FTC), 24% of scam targets suffer financial losses[2]. Existing solutions, such as iOS call transcription services and scammer databases, lack real-time contextual analysis for scenario-based detection. Regulatory frameworks like the Telephone Consumer Protection Act (TCPA) and TRACED Act reflect governmental efforts, but techniques such as number spoofing often bypass these protections[3]. Victims are left with insufficient advice, such as "hang up immediately."

Interviews with fraud victims reveal that scams frequently exploit heightened emotional states, impairing decision-making and fostering shame, which isolates victims. Scammers leverage these vulnerabilities to limit access to information and support networks. This research demonstrates how human-centered design can address these challenges by proposing systems such as community-based interventions, biometric authentication for vulnerable populations, and shared memory protocols to enhance trust.

However, a more pressing issue emerged through the research process: the rise of deepfake technologies and their potential to cause widespread emotional and financial harm. While current scenario-based scams remain prevalent [5], the potential for AI to simulate human voices presents un-precedented vulnerabilities in authentication and identity verification.[6] This urgent problem underscores the need for proactive design interventions and raises broader philosophical questions about the essence of human identity in a world increasingly influenced by machines.

The study delves into the concept of humanness through design methodologies, often overlooked in efficiency-driven AI development, to explore traits that define humanness. By reframing the Turing Test, this research shifts from measuring machine intelligence to preserving human authenticity. Its artifacts foster dialogue, encouraging reflection on the meaning of humanity and engaging with the ethical and philosophical dimensions of AI integration.

Background

This research employs a 'research through design' approach[1] to address critical challenges at the intersection of cognitive science, philosophy, and authentication technologies. It integrates speculative design methodologies, as introduced by Anthony Dunne and Fiona Raby[20], using artifacts that propose alternative futures. These artifacts invite participants to experience potential future scenarios, fostering dialogue and critical reflection on the evolving dynamics between humans and machines.

The project aligns with the philosophical and practical foundations of design outlined by Kazuo Kobayashi and Kenya Hara in Designing Design[21], which argue that design extends beyond problem-solving or functionality to open new ways of perception. This lineage informs the reinterpretation of CAPTCHA[9]—a ubiquitous and mundane interaction—as a tool for exploring humanness. The research investigates the provocative question: "What if it were possible to assess how much humanness we retain as blended beings?" By doing so, it positions design as a means of communication that offers alternative perspectives and provokes critical discussions about the fundamental nature of humanity.

A key theoretical influence is John Searle's Chinese Room Experiment[10], which critiques the notion that computational systems can achieve genuine understanding or consciousness.[Fig. 5] In the thought experiment, Searle argues that while machines may simulate human-like responses by manipulating symbols according to programmed rules, they lack true intentionality or comprehension. This distinction between syntactic processing and semantic understanding directly informs this research's exploration of humanness. By applying Searle's critique, the project emphasizes that identifying human traits requires moving beyond surface-level outputs—such as those mimicked by AI—and focusing on the deeper, ineffable qualities that define human existence, such as emotion, intentionality, and context-awareness.

This perspective is particularly urgent in light of AI-enabled voice synthesis and deepfake technologies, which blur the distinction between human and machine, raising ethical concerns and societal risks[5]. These technologies highlight the limitations of traditional approaches, such as the Turing Test[8], which evaluates machine intelligence based on its ability to produce human-like outputs. Similarly, CAPTCHA systems, reliant on logical pattern recognition, struggle to maintain effectiveness as AI advances.

To address these challenges, this research proposes a shift in focus from detecting machines to identifying and preserving uniquely human traits. By reinterpreting the Chinese Room Experiment in contemporary contexts, the research underscores the inadequacy of purely computational frameworks in understanding human identity. Instead, it advocates for design methods that prioritize qualities like emotionality, imperfection, and embodied experience—traits that AI cannot authentically replicate.

This lineage extends to popular philosophical discourse, where themes of consciousness and identity have been explored in works such as Blade Runner[13] and Detroit: Become Human[14]. Through this interdisciplinary lens, the project contributes to both practical solutions for digital security and broader theoretical frameworks for understanding human-machine coexistence in the 21st century.
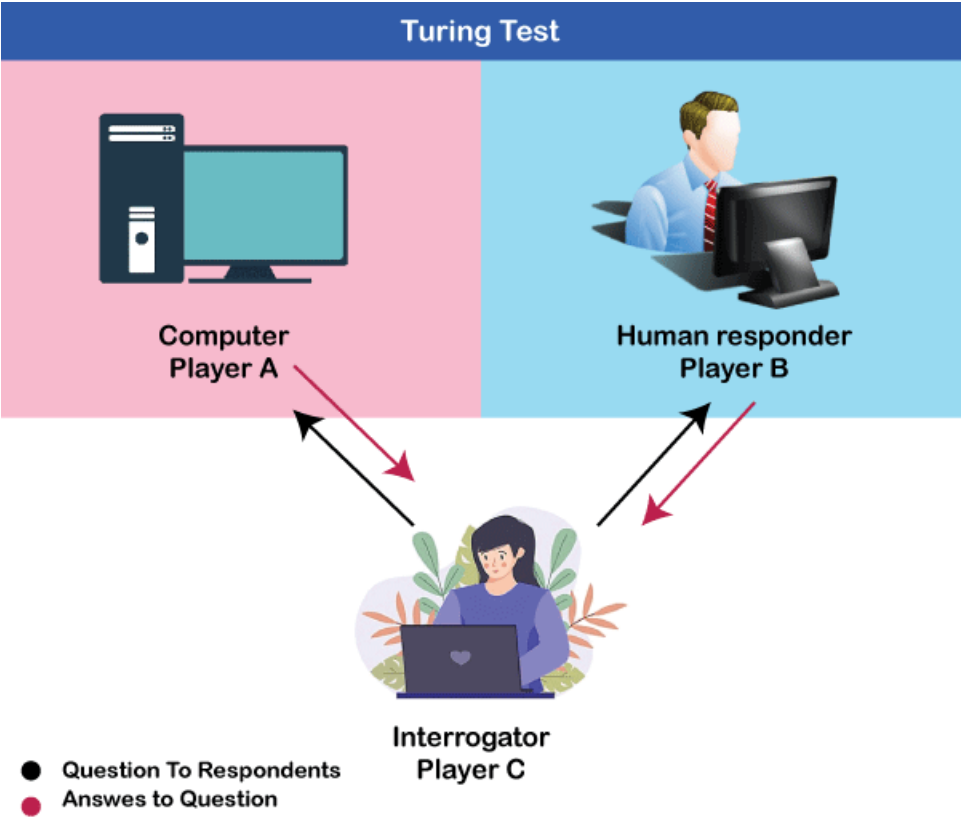
Fig 4. Concept of turing test
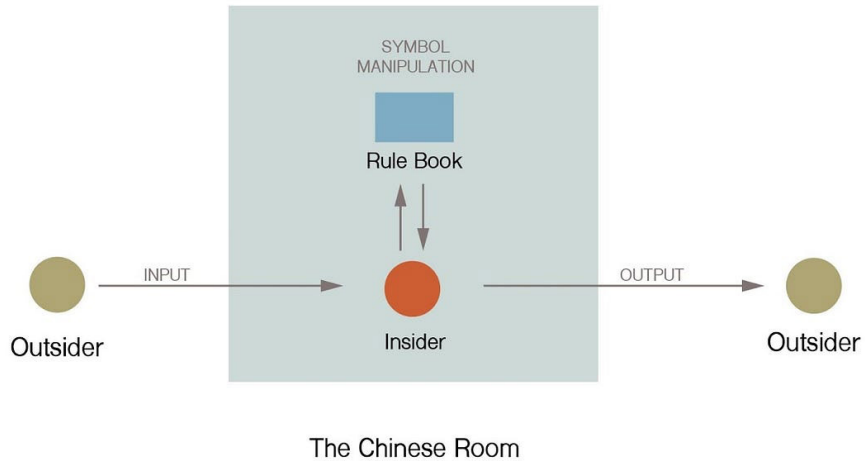
The Chinese Room

Fig 5. The chinese room thought experiment

Beyond Financial Loss: The Hidden Toll of Telephone Scams

The foundation of this research stems from witnessing my own family fall victim to telephone fraud. This experience revealed that the impact of such scams extends far beyond financial loss—it creates deep psychological wounds that fundamentally shake one's trust in human communication.[16] The feeling of betrayal, coupled with persistent anxiety, lingered long after the financial consequences were resolved. This personal trauma opened my eyes to a broader societal challenge: phone scams represent a particularly insidious form of fraud because their small-scale, distributed nature often prevents them from becoming institutional priorities, despite their cumulative societal impact. More troublingly, these scams disproportionately affect vulnerable populations—elderly individuals, non-native speakers, and those less familiar with technology—creating an urgent accessibility and equity challenge that demands immediate design intervention.[17]

A Designer's Quest in wicked problem in the Tech Era

As this research progressed, it became evident that purely technical solutions to telephone fraud were insufficient. The problem exhibits classic characteristics of what Rittel and Webber define as a "wicked problem" [18]—multiple stakeholders, competing constraints, and no clear solution space. This realization led me to deeply contemplate the fundamental question: "What can I, as a designer, uniquely contribute to this challenge?" Through this reflection, I recognized that design's value lies not merely in technical implementation, but in its capacity to synthesize complex problems, focus on human interaction, and envision systematic solutions that bridge technical feasibility with human needs.

This perspective is particularly crucial in our current technological landscape, where the unbridled deployment of technology often outpaces ethical consideration. Living in the Bay Area, I've developed a growing unease with the tech industry's tendency to deploy solutions rapidly without sufficient ethical consideration. The unbridled deployment of technology without philosophical reflection raises concerns about its societal impact. As AI and other emerging technologies proliferate, and as someone who deeply values humanities and philosophical inquiry, I believe design thinking offers a structured approach to addressing these philosophical questions through empirical investigation and human-centered methodologies.

Reactive
Direct Solution

Currently applicable
Feasible

Vision
Conceptual

Preventive
Indirect Solution
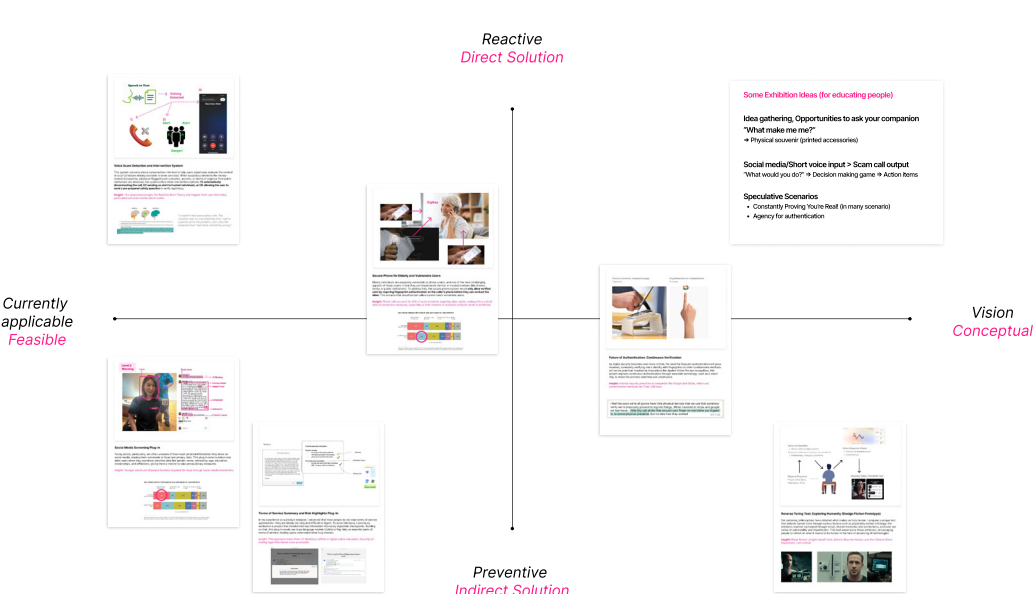
From Individual Authentication to Universal Human Essence: Why We Need to Think Bigger

The recent unveiling of anthropomorphic robots like the Tesla Bot [19] prompted a provocative question: "Is this really the future we want?" Watching machines read books to children made me deeply contemplate the direction of our technological progress. While this research initially focused on authentication—asking "What makes me uniquely me?"—I realized this approach merely scratched the surface, focusing too narrowly on individual personality traits and differences.

This insight led me to pursue a more fundamental question: "What makes us uniquely human?" This shift from individual traits to universal human characteristics reflects my conviction that as AI emerges from human civilization, we must identify and preserve core aspects of human essence that transcend individual personality. Rather than focusing on small-scale individual uniqueness, I believe we must first establish the universal pillars of human nature that will allow us to maintain our humanity as AI continues to evolve.

Reimagining the Turing Test: Why We Need a Reverse Approach

The limitations of current human-machine distinction paradigms, exemplified by the Turing Test, highlight the need for new approaches. Traditional logical tests become inadequate as computing power surpasses human capabilities. Moreover, the binary human/machine distinction fails to acknowledge the spectrum of AI applications in our lives—from judicial AI designed to exceed human logical capacity to companion AI intended to simulate human interaction.

This research proposes a paradigm shift from detecting machines among humans to identifying fundamental human qualities among machines. This "reverse Turing test" approach emerges from my observation that as machines become increasingly integrated into human society, we must focus not on what makes machines different, but on what makes humans irreplaceable. This reframing is essential for maintaining human agency and authenticity in an era of unprecedented technological integration.

Designing human interaction that foster trust and safeguard against emerging threats

01 Vision

As voice scam evolves, experts emphasize not only technical solutions but also the importance of human-to-human authentication. As a designer, I see my role as envisioning the future, crafting preventative strategies, and empowering people to navigate these challenges through human connection.

02 Thesis Idea

How do we design seamless, trustworthy ways for individuals to verify their identity, and how will these methods evolve in the future? By focusing on human interaction, I want to create solutions that foster trust and safeguard against emerging threats.

03 My Thesis Journey

Real-world problem

(Voice Scam) → (Authentication) → (Humanness)

Philosophical Question

Deep-fake scam
Scenario based scam

(Prevention)

Methodological approach

What makes you?

My opinion
- Emotion / Vulnerability
- Free from freewill & choice (Anxiety vs Lethargic)
- Imperfection / Inconsistent (inability to make flawless decisions, asymmetries in how we function)
- Physical presence, genetic mechanism
- Social behavior (e.g. looking up when others point to the sky)

- What people around me would say about myself? Would it be different to who would I ask?
- Is it abstract things like personality, accents or more like physical/tangible things like appearance or voice?
- Can technology detect this? If not, what are the challenges?
- Who would be the experts that I can talk to or translate to with?
- What is self? How can I define me, until where, what is the boundary?
- Can I use this for security?

Could deepfake scams lead to new forms of digital reputation management, where individuals must constantly prove the authenticity of their actions and words?

How might we help people in the fight-or-flight response (that the amygdala activates)? What interventions?

AMYGDALA HIJACK

Stakeholders

● Vulnerable people
Problem owners
Victims
Elderly

● Experts / Collaborators
Policy & Government
Security companies
Trust / AI / Information experts
Human behavior experts

What makes human human?

Turing Test / Captcha

I'm not a robot

What are the long-term societal impacts of eroding the boundary between the real and the synthetic? How will this reshape our understanding of reality itself?

What is self?

Mind, Brain, and identity

The Mind Body Problem
Our minds seem to be non-physical and different from our bodies. Our bodies seem to be something different from our minds. Are they really different? What is a mind? What is a body? How do they relate?

The Chinese room argument

(The Chinese Room)

The teletransporter thought experiment

The torture test

Research Question

Can we establish a set of core characteristics or responses that are uniquely human in an increasingly AI-driven world?

Designing interactive, real-world CAPTCHA systems that quantify individual markers of humanness, while highlighting the boundaries and limitations between human and machine.

Inspiration & Desk research

THE EASY INTELLIGENCE TESTS THAT AI CHATBOTS FAIL
Scientists are racing to find new ways to clarify the differences between the capabilities of humans and of large language models. By Celeste Biever

THE VEGETARIAN

Collective voice & Disciplines

Natural Sciences	Engineering	Medicine and Health Sciences	Social Sciences	Humanities
Physics	Mechanical	Clinical Medicine	Economics	Philosophy
Chemistry	Electrical	Public Health	Sociology	History
Biology	Environmental	Nursing	Political Science	Linguistics
Biology	Aerospace		Anthropology	Literature
Earth Sciences	Industrial			

Arts and Design	Information Sciences	Business and Management	Education	Law
Visual Arts	Computer Science	Business Administration	Philosophy of Education	Constitutional Law
Performing Arts	Data Science	Marketing	Pedagogy	International Law
Design	Information Management	Finance		Criminal Law
Architecture				

Gender, Nationality, Social status, Location, Age, Education background, Disability ?

User Study

Diary Study

Survey

What makes us human?

What makes us social?

Synthesis (updating)

Core human experiences	Emotional Dimensions	Cognitive and Reflective Aspects
Empathy and Connection	Emotional Complexity	Self-awareness
Reciprocity and Care	Emotions and Authenticity	Consciousness
Social Identity	Pain	Narrative Sense-making
Community Belonging	Feeling of Uncanny Valley	Choice and Free will
Cultural Values	Boredom	Decision making
Shared memories		Morality, Ethics
		Intentionality
		Value system

Physical and Biological Aspects	Characteristics and Imperfections	Creative and Expressive Abilities
Physical Embodiment	Personal experience (Depth and Subjectivity)	Creative Expression
Biological Factors	Imperfection and Flow	Imagination
	Lack of Consistency	

Core Idea

CAPTCHA

A type of challenge or test designed to distinguish humans from robots

qVpXayk

18 + 5 =

Current CAPTCHA
(Completely Automated Public Turing Test to Tell Computers and Humans Apart)
- Digital
- Yes or No answers

Future CAPTCHA
(Completely Automated Physical Turing Test to tell Computers and Humans Alike)
- Digital & Real-world
- Spectrum / Scale

Approach

1
Initial Investigation: Telephone Fraud Prevention

The first research phase focused on understanding the complex dynamics of voice-based fraud. Through extensive desk research, I analyzed scammer strategies and patterns, paying particular attention to the evolution of techniques in response to technological advancement. This investigation was complemented by user interviews with scam victims, which provided crucial insights into behavioral patterns and decision-making processes under pressure.

A notable finding from our preliminary research was the critical role of neurological responses during urgent situations. This led us to conduct additional desk research into neuroscientific literature, specifically examining how the brain processes information during high-stress scenarios. This neurological perspective proved invaluable in understanding why traditionally rational individuals might make seemingly illogical decisions when confronted with voice scams.

2

Can we establish a set of core characteristics or responses that are uniquely human in an increasingly AI-driven world?

To address this complex query, I implemented a multi-faceted research strategy.

(1) Qualitative Research

(a) Diary Study [Fig. 8, 9]

I recruited 13 participants from the UC Berkeley community for an in-depth diary study lasting between three days to one week. The study was carefully structured to encourage deep reflection while maintaining practical feasibility. Prior to beginning the study, participants were briefed that our aim was to "explore the overlaps, similarities, and differences between humans and machines," providing context without overly directing their responses.

Participants received daily prompts including:
- *"Think about what unique qualities or traits do you feel define you as a human."*
- *"Describe a moment when you felt deeply human or connected to your humanity."*

For each entry, participants documented:
- *Time of day*
- *Day of the week*
- *Context of the moment and action*
- *Associated feelings*

To capture evolution in thinking, I included pre-study and post-study reflection questions:
- *Initial: "What makes you feel human now? In one or a few words"*
- *Final: "Reflection: Are these experiences truly unique to humans? Could they be replicated by other beings (or AI, machines)?"*

The diary study format was specifically chosen to allow participants to engage with these profound questions over time, enabling them to discover insights within their daily experiences rather than forcing immediate responses to abstract concepts.

Over next 3 days... (shoot for 4-6 entries)
- Think about what unique qualities or traits do you feel define you as a human.
- Describe a moment when you felt deeply human or connected to your humanity.

Date & Time of the day	Content of the moment & Action	Feeling
(Example) 10/22 noon	I feel overwhelmed by my current workload. But I understand that my decision to leave a stable life and pursue new challenges in the U.S. was ultimately my choice.	I believe that the struggle between monotony and risk, along with the freedom to choose, is a core aspect of being human.

Date & Time of the day	Content of the moment & Action	Feeling
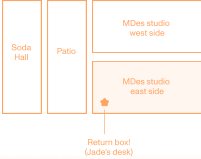
Diary study for the research on humanness :
What makes us human?

The study aims to explore the overlaps, similarities, and differences between humans and machines.

About you :)

Name (Contact) :

Field of study / Specialty :

What makes you feel human now? (in one or a few words!)

Fig 8. Diary Study

Fig 9. Design of the diary

(b) Expert interview and Media Analysis

Recognizing the anthropological scope of the inquiry, I expanded my research to include diverse perspectives across disciplines. I developed a disciplinary map (Figure X) to guide the expert interview process. This led to:

- *A one-hour deep interview with a UC Berkeley social science PhD candidate*
- *Structured interviews with three machine learning engineers*
- *Extensive media review including academic literature, films, and popular media*
- *Participation in relevant technology conferences and academic talks*

This non-traditional combination of information sources proved particularly valuable in developing a holistic understanding of human-machine interactions and distinctions.

(2) Quantitative Research: Campus-Wide Survey [Fig. 10]

To gather broader perspectives, I implemented a two-week survey using an interactive board installation. The survey location was strategically rotated daily among:

- *Soda Hall (Computer Science population)*
- *Sutardja Hall (Engineering and Business population)*
- *Life Science Building (Biology and Neuroscience community)*
- *Moffitt Library (diverse academic population)*

This rotation strategy was specifically designed to capture varied perspectives across academic disciplines, ensuring a rich dataset representing diverse viewpoints on human uniqueness.

Fig 10. Campus-wide survey

1
Telephone Fraud Prevention Solutions

Drawing from the understanding of human characteristics, three solutions were developed to prevent voice scams:

Community-Based Alert System
Building on the metaphor of "walking together at night" for safety in the physical world, this solution leverages community protection in the digital sphere. The system uses Large Language Models (LLM) to detect common scam keywords and scenarios through real-time transcription. When suspicious patterns are identified, it suggests ending the call and alerts close contacts with the user's location and situation. This addresses the critical vulnerability of isolation during scam attempts, as evidenced by interview participant D who noted, "The call dropped due to poor reception in the basement. Otherwise, I would have transferred money to the scammer impersonating the FBI."

Biometric Authentication Protocol
Recognizing the need for stronger verification methods, this solution implements biometric authentication for calls to predetermined vulnerable users (such as elderly parents). Users must complete local biometric verification before connecting to these protected numbers. While initially designed for users with limited social interaction circles, this solution anticipates a broader future trend where authentication will become necessary across all digital interactions to distinguish between AI and human agents in an increasingly deepfake-prevalent environment.

Shared Memory Authentication [Fig. 13]
This solution returns to the fundamental level of human relationships, utilizing shared memories as a security measure. Inspired by concepts like those portrayed in "The Three-Body Problem," where shared memories become the only secure form of information, this system implements security questions based on shared experiences that only genuine participants would know. When scam behavior is suspected, the phone suggests pre-stored security questions that must be answered to continue the call.
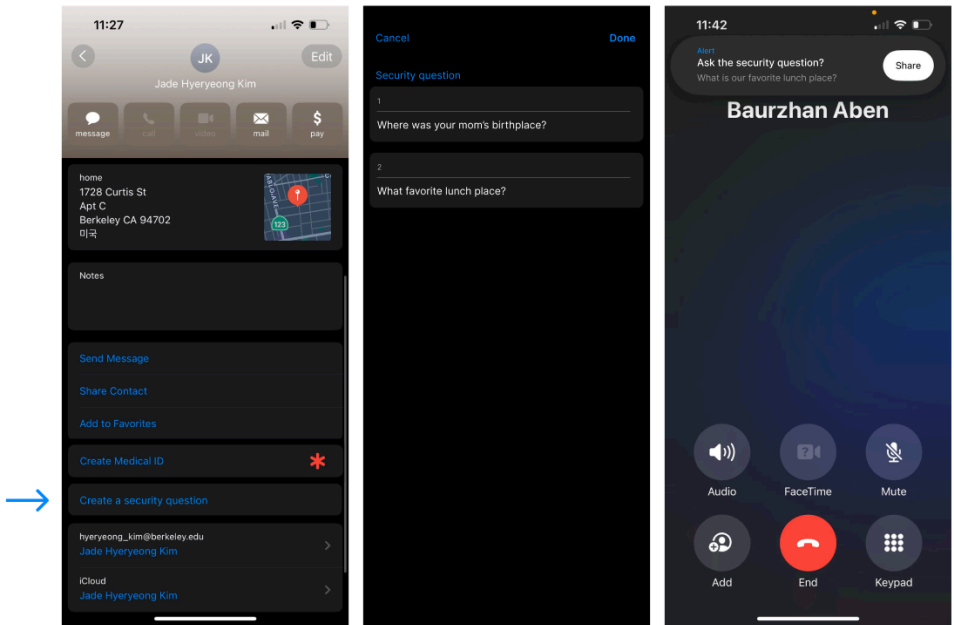
Fig 13. Shared Memory Authentication

2
A set of core characteristics that are uniquely human

Through research including diary studies, campus-wide survey, media reviews and expert interviews, this study identified several key characteristics that distinguish human nature from machines. [Fig. 14]
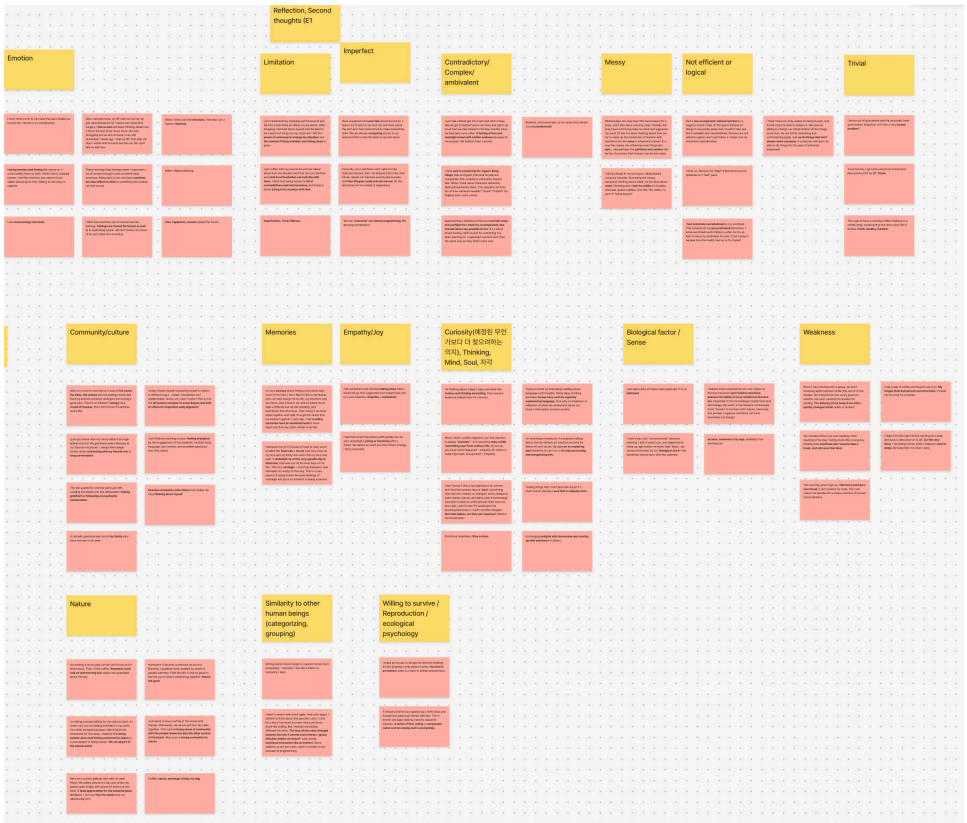

Fig 14. Synthesis

(1) Inefficiency as a Source of Naturalness

The research revealed that human inefficiency, often considered a limitation, actually serves as a fundamental source of natural behavior. Participants frequently mentioned characteristics that might be considered negative from a purely operational perspective: uncertainty about the future, emotional volatility, procrastination, and feeling overwhelmed. Notably, participants cited extremely trivial "human problems" such as running out of guacamole, enjoying an early return from school, or finding comfort in morning coffee rituals. While these inefficiencies might seem disadvantageous, participants generally cherished these limitations, recognizing them as integral to human experience.
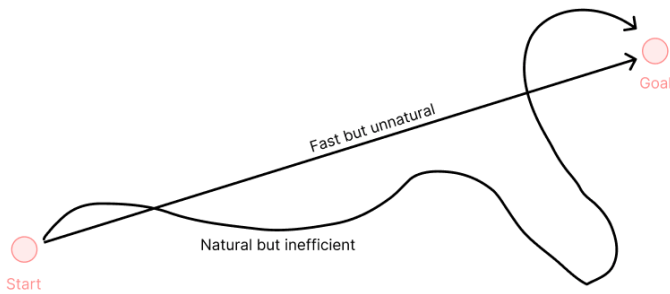
(2) Emotional Complexity and Survival

Emotions emerged as a central theme, particularly in their role as evolutionary tools for survival and reproduction. An interviewed Computer Vision engineer referenced Professor Eun-Kook Suh's work on happiness[20], explaining how emotions serve as evolutionary rewards or deterrents for behaviors beneficial or detrimental to survival and reproduction. This perspective aligns with ecological psychology, suggesting that emotions—both positive and negative—serve as crucial feedback mechanisms that machines, lacking survival and reproductive imperatives, cannot authentically replicate.

Sometimes I think having emotion is a curse

But do I want to be a robot? No, it's kinda scary....

Sometimes I think about why I like flowers so much,
- Adaptation hypothesis - Flowers provide critical information that fruit is on the way.
- Byproduct hypothesis - Richly bloomed flowers signal the future growth of sweet, ripe fruits.

(3) Memory and Temporal Experience

The research highlighted the unique nature of human memory, both individual and collective. Drawing on Walter Benjamin's concept of "aura" in art[21], participants described the irreplaceable value of temporal experiences and memories. Diary entries revealed strong emotional connections to specific moments and places, demonstrating how the temporary nature of experiences enhances their significance. Additionally, interviews with sociology experts revealed the importance of collective memory, particularly in the context of generational trauma(post memory, Hirsh)[22] and cultural identity.

(4) Embodiment and Physical Presence

The study found that physical embodiment plays a crucial role in human experience. Participants emphasized the importance of both mental and physical aspects of existence, particularly in social contexts where bodily expressions and vocal communication serve as essential tools for connection.This finding aligns with the mind-body problem[23], which questions whether the mind is independent of the body or a product of it. This also ties into the uncanny valley[24][Fig.18]. This finding supports current trends in AI development, where there is increasing recognition of the need to bridge the digital-physical divide for more natural interaction. Similarly, reflections on artificially created entities, like test-tube babies challenge perceptions of authenticity and humanity.

(5) Unpredictability and Soul

A significant finding was the human capacity for contradictory, complex, and ambivalent behaviors. Unlike machines with predetermined input-output relationships, humans demonstrate randomness and unpredictability in their responses. Participants frequently referenced an indefinable quality—often termed as "soul"—that they felt could not be replicated by artificial intelligence. This was particularly evident in artistic expression and emotional depth, where even AI engineers themselves reported being able to distinguish machine-generated content through an intuitive "feeling."

These findings suggest that the very characteristics often viewed as human limitations—inefficiency, emotional vulnerability, temporal constraints, and unpredictability—are actually essential components of natural human existence. This understanding has significant implications for human-AI interaction design and the future development of artificial intelligence systems.
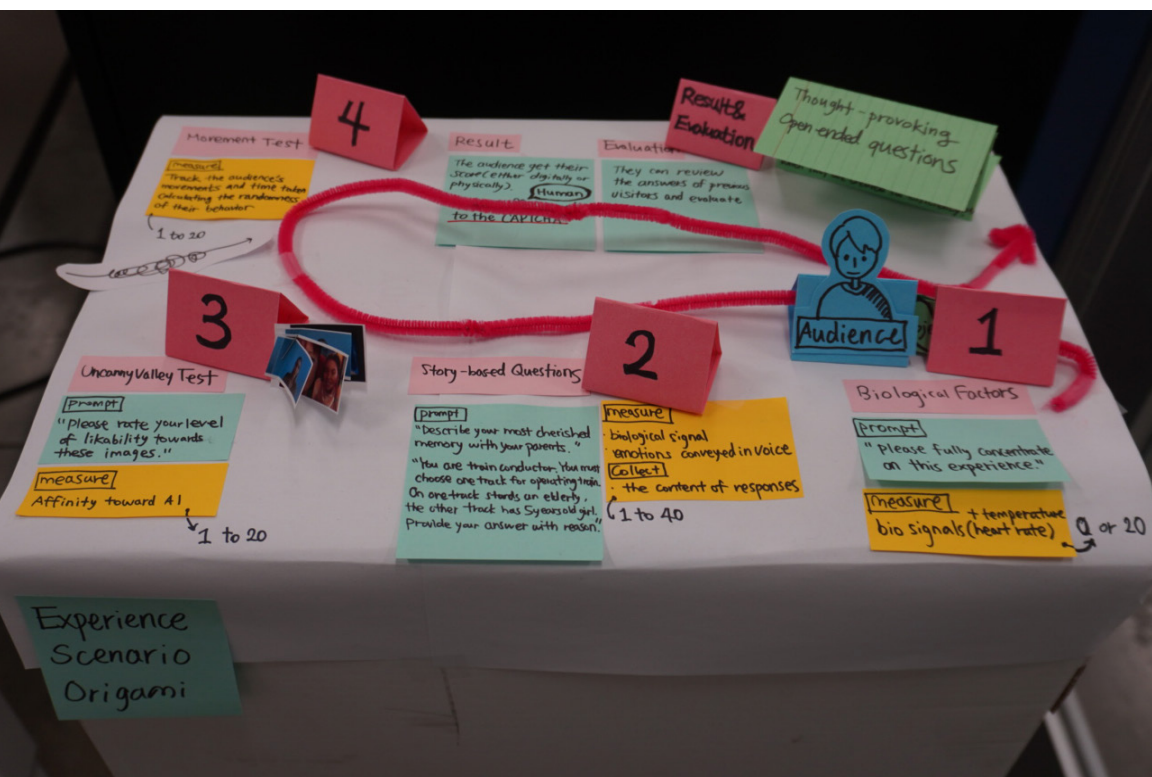
Fig 15. Experience Scenario Origami

Do you have a name?

Name

Next

Place and move around your finger on the screen.

How do you feel about this image?

Like Neutral Dislike

How emotional are you?

Choose a scenario keyword.

- Empathy
- Ethical Dilemma
- Imagination
- Trolley Problem
- Value Judgment
- Memory-Based Engagement
- Pressure
- Cultural or Social Reaction
- Family Situation

he presentation day for a major project you've been working on tirelessly for
owever, your colleague presents your idea as their own. After the presentation,
ager is impressed and promises the project to your colleague. How would you handle
uation? Please explain your reasoning.

At first I will be really mad at my colleague but I don't know I I'll try to understand
why technology act like that and then maybe try to persuade my colleague I don't know
I'll

Done

Your emotion level

Your response conveyed 'Anger' strongly.
We are now 32% more confident that you are human.

How random are your moves?

Tracking in progress... Move along the beat. Feel the mu

The randomness of your moves was 15 out of 20.

Test completed

Jade, you are 81% human.

Fig 16. Interactive Experience

Discussion

This research raises critical questions about human-machine distinction and authentication in an increasingly AI-integrated world, while also providing methodological insights for philosophical design research.

Key Implications

(1) The Paradox of Efficiency and Naturalness
One of the central finding of this research is the inherent tension between efficiency and naturalness in human-machine interaction. While inefficiency appears to be a hallmark of human behavior, it often serves deeper evolutionary purposes. For instance, emotional complexity—though seemingly inefficient—has proven advantageous for human survival and reproduction as social beings in ecological psychological perspective. This raises an intriguing question: *if machines develop self-awareness and reproductive drives, would they too develop "inefficient" traits that we currently associate with humanity?*

(2) Authentication in an Agent-Mediated Future
As we move toward a future where AI agents increasingly mediate human interactions, the nature of authentication must evolve. This research suggests we may need to shift from Human-Computer Interaction (HCI) to Agent-Agent Interaction (AAI) paradigms. The proposed voice scam prevention solutions not only demonstrate how human characteristics—such as shared memories and community trust—can inform security measures, but also question if agents should share this trait in this evolving landscape.

(3) The Human Supremacy Paradox
Beyond technical considerations, this exploration invites broader contemplation on the necessity of distinguishing "real" humans, the boundaries of naturalness, and the reasons behind our discomfort with human-like machines. It reflected on a noteworthy tension in our relationship with AI: while we strive to create machines that replicate human capabilities, we simultaneously fear their potential to surpass us. As one diary study participant noted, "Feeling affinity with robots felt like betraying humanity." This statement highlights an underlying human supremacy bias and perhaps a deeper existential anxiety about the nature of consciousness and creation. Perhaps this discomfort mirrors our own actions and fears, as AI safety concerns stem more from human misuse than from the technology itself. Ultimately, this work is less about measurement and more about fostering dialogue—encouraging us to redefine what it means to be human.

Methodological Insights

This research explored philosophical questions through design methodologies, yielding valuable insights about research approaches:

Diary Studies
The longitudinal diary studies revealed both strengths and limitations. While they provided deep insights into personal experiences of humanity, engagement declined over time. Notably, the overlap between research methods (focusing on emotions) and research subject (human characteristics) created potential methodological limitations. However, unexpected creative expressions, such as participants drawing in text fields, provided additional layers of insight into human nature.

Quantitative Surveys
The interactive survey approach, while sacrificing some depth, successfully engaged participants in collective reflection. The "+1" additions demonstrated how public participation could foster community dialogue about human nature. However, the academic setting limited demographic diversity, suggesting a need for broader sampling in future research.

Limitations
- Demographic constraints due to the academic setting
- Privacy concerns limiting biographical data collection
- Potential self-selection bias in participation
- Limited cross-cultural perspectives

Future research directions
Workshops could be conducted to explore practical applications of the findings in future scenarios. Broader demographic sampling across different life stages would provide deeper insights into how these concepts are perceived. Additionally, cross-cultural studies could help identify universal human characteristics and highlight variations shaped by cultural contexts. Finally, investigating the evolution of agent-agent interaction could offer valuable perspectives on how relationships and authentication between AI systems might work and integrate into society.

Conclusion

This research navigates the dual challenge of addressing telephone fraud and examining human authenticity in an AI-integrated era.

The proposed interventions—community-based alerts, biometric authentication, and shared memory protocols—demonstrate the potential of design to address urgent societal problems. These systems empower users by leveraging uniquely human traits like emotional connections and collective trust. They also highlight the importance of contextual, scenario-based fraud prevention as opposed to generic, algorithm-driven solutions.

Beyond technical applications, this research contributes to our understanding of human-machine distinction. Through diary studies, expert interviews, and interdisciplinary exploration, it identifies inefficiency, unpredictability, and emotional depth as defining human traits. These findings challenge efficiency-centric AI paradigms, arguing for the preservation of imperfections that shape authentic human experience.

The significance of this work extends to broader societal and ethical implications. As AI becomes deeply integrated into daily life, the distinction between human and machine grows increasingly blurred. This research proposes a reverse Turing Test, reframing the challenge as identifying core human qualities amidst technological complexity. By prioritizing human agency and authenticity, it offers a path forward in designing systems that respect and preserve our humanity.

Ultimately, this work underscores the transformative power of design in addressing contemporary challenges while engaging with timeless questions of identity and existence. It invites reflection on what it means to be human, advocating for a future where technological progress complements, rather than compromises, our essential human nature.

Through this journey, I gained a deeper understanding of myself. While I once envied those with a highly logical approach and viewed my emotional nature as a weakness, I have come to appreciate it as a strength. Many questions remain unanswered and numerous directions await exploration, I look forward to pursuing them with curiosity and determination.

* Disclaimer: I co-edited this work with Claude 3.5.

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Jade, Are you a human?