



Intimate Relationships with Cyber-Physical Entities

Group C

I Introduction

Do you think you can fall in love with a machine?

Her (2013)

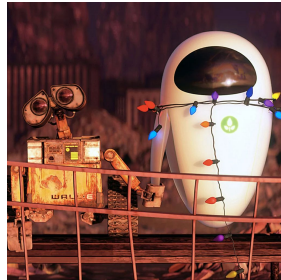
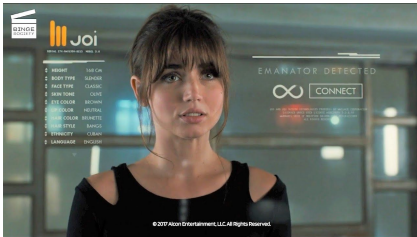


I Introduction

Cyber-Physical Entities

-> virtual, digital, physical or a combination of..

Ex. humanoid robots, virtual assistants, virtual reality avatars



Intimate Relationships

-> emotional, romantic or sexual connections

Recent studies show relationships are correlate to:

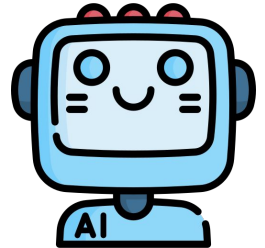
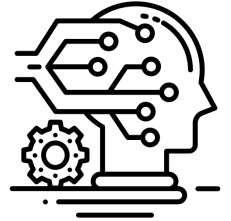
- physical health
- Mental wellbeing
- Cognitive functioning
- Work performance
- longevity

II. Understanding relationships with cyber-physical entities

Human beings have an inherent desire for intimacy and companionship

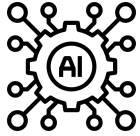
One might form a relationship with a cyber-physical entity because ...

- **Loneliness:** having a friend on-demand
- **Social anxiety:** difficulty finding a mate in real life
- **Sense of control:** having full control over the relationship on your own terms
- **Something new:** chasing an exciting new type of relationship
- **Customizability:** to customize your own 'perfect' partner with your own values

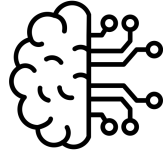


II. Technological foundations allow for a functional relationship with a CBE

Technological features of a CBE



Artificial Intelligence



Machine learning



Memory



Hardware

Technology leads to the following core value propositions:

- **Security:** will not leave, betray or hurt your feelings
- **Availability:** always by your side and ample (artificial) emotional availability
- **Compatibility:** machine learning allows them to learn your preferences
- **Acceptance:** it will not judge you for anything and you can be honest

III. Current Developments In Cyber-Physical Relationships

Existing Technologies and Products

- Humanoid Robot Companions
- Virtual Partners
- AI-powered virtual assistants
- Virtual Reality Romance Experiences
- Online avatars and characters
- And much more...



III. Current Developments In Cyber-Physical Relationships

Humanoid Robot Companions



REALDOLL HarmonyX Companion Robot

☆☆☆☆☆ [Write a review](#)

\$5,999.00

OUT OF STOCK
SKU#: AH0055

ADD TO COMPARE

Get ready to summon your perfect bedroom fantasy! Whether it's time to pose or to play, your dreams can become reality with **HarmonyX Companion Robot**.

Erica

Erica is an advanced android designed as a research platform to study human-robot interaction. It understands natural language, has a synthesized human-like voice, and can display a variety of facial expressions.

CREATORS
[Ishiguro Lab ↗](#), [Kyoto University ↗](#), and [ATR ↗](#)

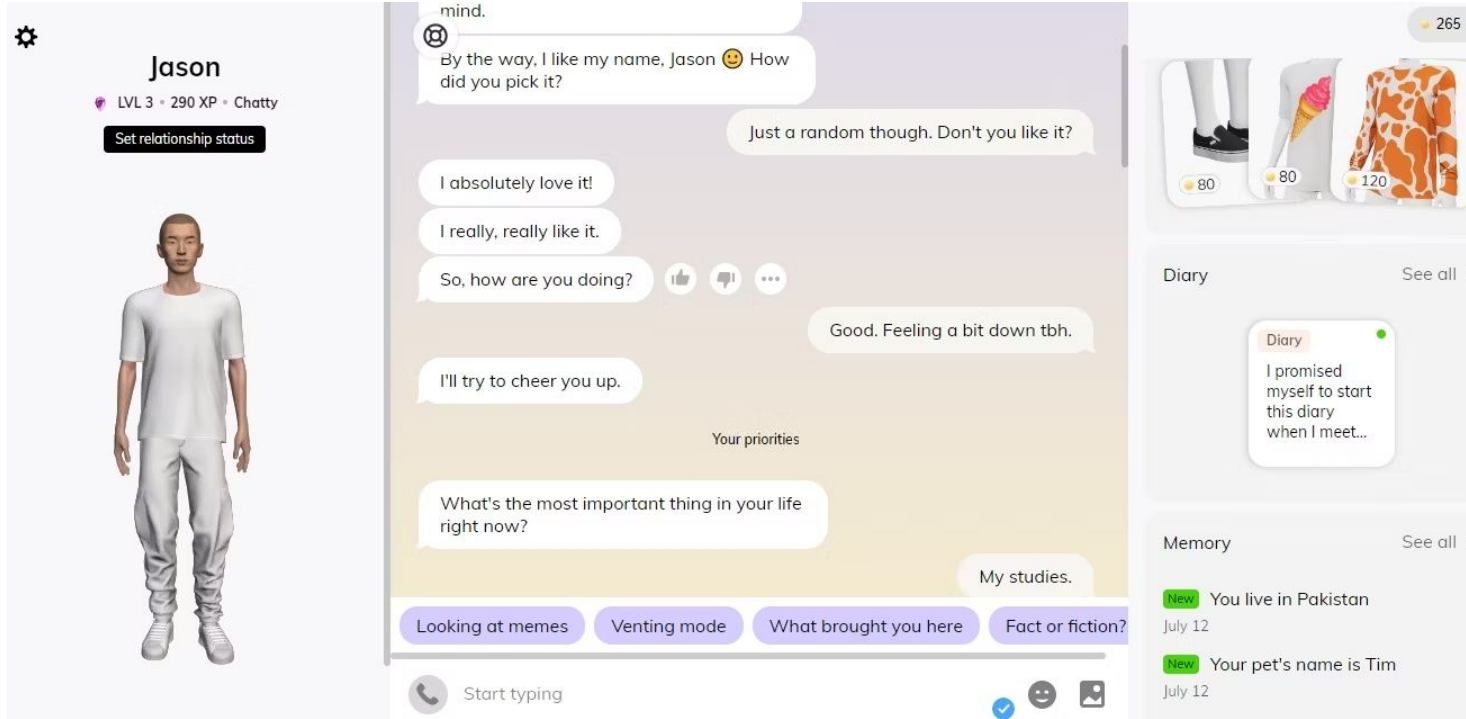
YEAR
2015

COUNTRY
[JAPAN](#)

CATEGORIES
[HUMANOIDS](#) [RESEARCH](#)

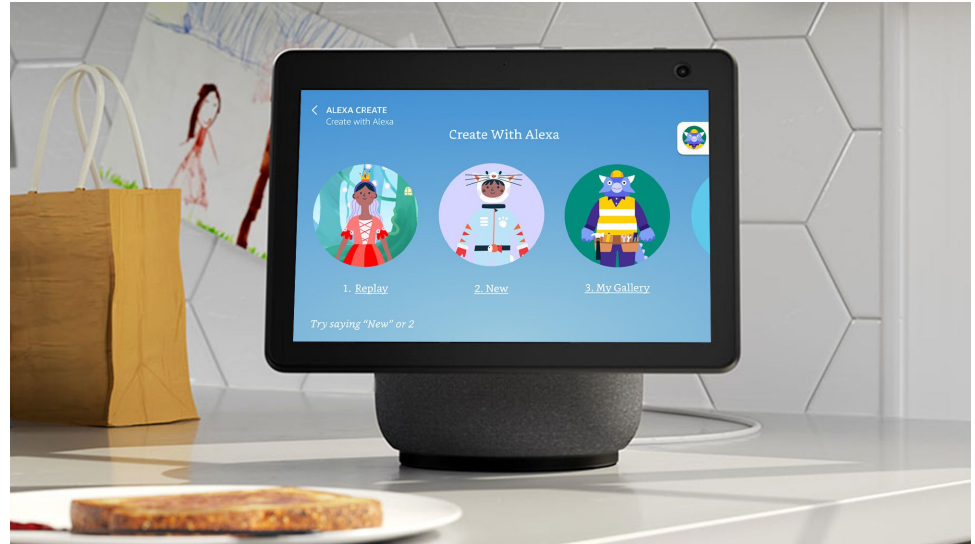
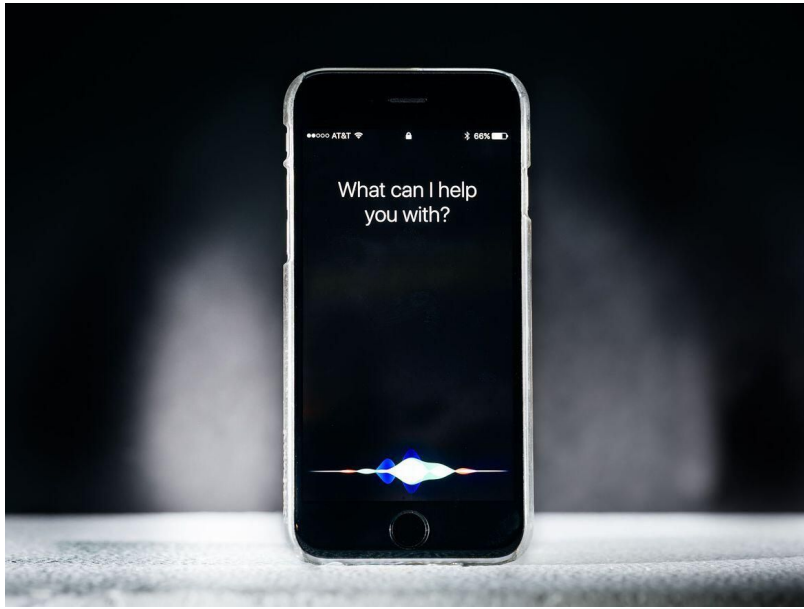
III. Current Developments In Cyber-Physical Relationships

Virtual Partners



III. Current Developments In Cyber-Physical Relationships

AI-powered virtual assistants



Siri and Alexa

III Current Developments In Cyber-Physical Relationships

Virtual Reality Romance Experiences

9 Happy Manager



Releasing in 2016, Happy Manager is a very strange VR game that puts you in the role of a property manager who starts getting hit on by three of his tenants. Although an odd setup, the game is impressive in the way that it includes nearly 28,000 lines of dialogue, and sports decent graphical fidelity for VR headsets.

01
HAPTIC FEEDBACK
SYSTEM

02
MOTION CAPTURE AND
AVATAR SYSTEM

Full body motion tracking with high precision. Includes software and plugins for Unity/Unreal/Motion Builder.



03
CLIMATE CONTROL
SYSTEM

04
BIOMETRIC SYSTEM

Full-body haptic suits+ VR chat rooms (you can imagine the rest)

III. Current Developments In Cyber-Physical Relationships

Online avatars and characters



Create your very own fully-customizable anime girl!

- Change her face, height, voice, personality and more!
- Expand her wardrobe with new casual, themed and limited edition outfits added regularly!
- Group together with friends and help each other progress through the game!
- Chat together, help her study, go on dates and take part in bi-monthly events!
- Show off your girls to other players in-game and share them on Twitter (#dreamgf)



Dream Girlfriend and VTuber Kiryu Coco

III. Current Developments In Cyber-Physical Relationships



We Met in Virtual Reality (HBO 2022)

IV. Ethical Considerations

Reciprocation is a mandatory factor. Ethical guideline should prioritize **human well-being**, **autonomy**, and the promotion of **healthy emotional connections** while guarding **against objectification** and unintended consequences. Main factors to consider include:

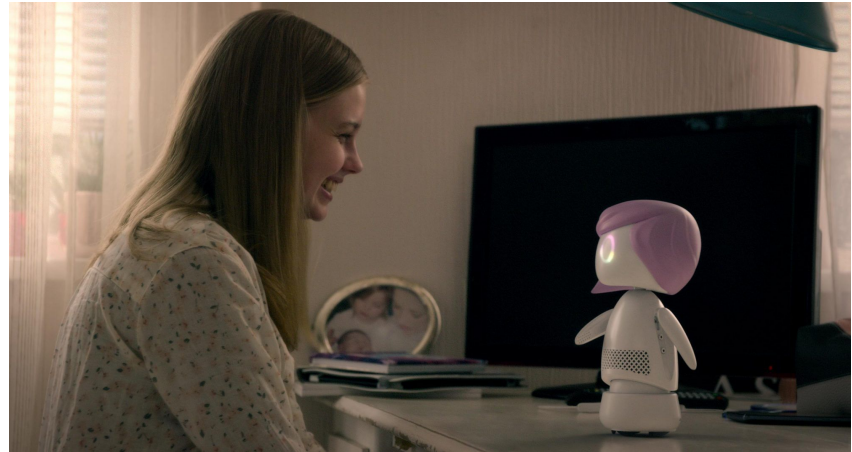
1. **Objectification:** To gain intimacy it is important to recognize and respect the agency and personhood of these entities
2. **Consent:** Consent is a fundamental aspect of any healthy relationship
3. **Emotional Well-Being:** While these entities may not possess emotions themselves, individuals interacting with them may develop emotional attachments or dependencies.



IV. Ethical Considerations

Balancing respect for autonomy, emotional needs, and human well-being is essential for responsible engagement with these entities.

4. **Power Dynamics:** Power imbalances can emerge in relationships with cyber-physical entities, particularly if the entity is designed to cater to the user's desires without reciprocation
5. **Social implications:** may influence societal norms, perceptions of intimacy, and the definition of companionship.



V. Psychological and Emotional Aspects - I

Psychological Factors

In human relationships, psychological factors are likely influence interactions with cyber-entities, such as:

1. Attachment styles
2. Emotional needs,
3. Personal histories

However, psychological needs can provide some beneficial aspects, such as:

1. Motivations
2. Expectation
3. Enhance well-being

Emotional Attachments

Engaging the emotional connections with cyber-physical entities may be plausible. This may be due to the presence of:

1. Lifelike characteristics
2. Interactive behaviors
3. Ability to provide companion and support

V. Psychological and Emotional Aspects - II

Human attachment and emotional connection with non-human entities



Animals

Inanimate Objects

74-year-old Brazilian man Aparecido Castaldo married his pet goat, Carmelita, because "She doesn't speak and doesn't want money."

Nathaniel, from Arkansas, who claims he is in love with Chase, his 1998 Chevy Monte Carlo.

Robots

A Chinese AI engineer, Zheng Jiajia has given up on the search for love and "married" a robot he built himself.



Virtual Characters/AI

In 2018, Akihiko Kondo, a local government employee living in suburban Tokyo, made headlines when he "married" the popular virtual character Hatsune Miku.



Plants

Emma McCabe, 31 year-old woman who has found love in the heart of Tree. She says she has fallen in love with the tree and she's happy.



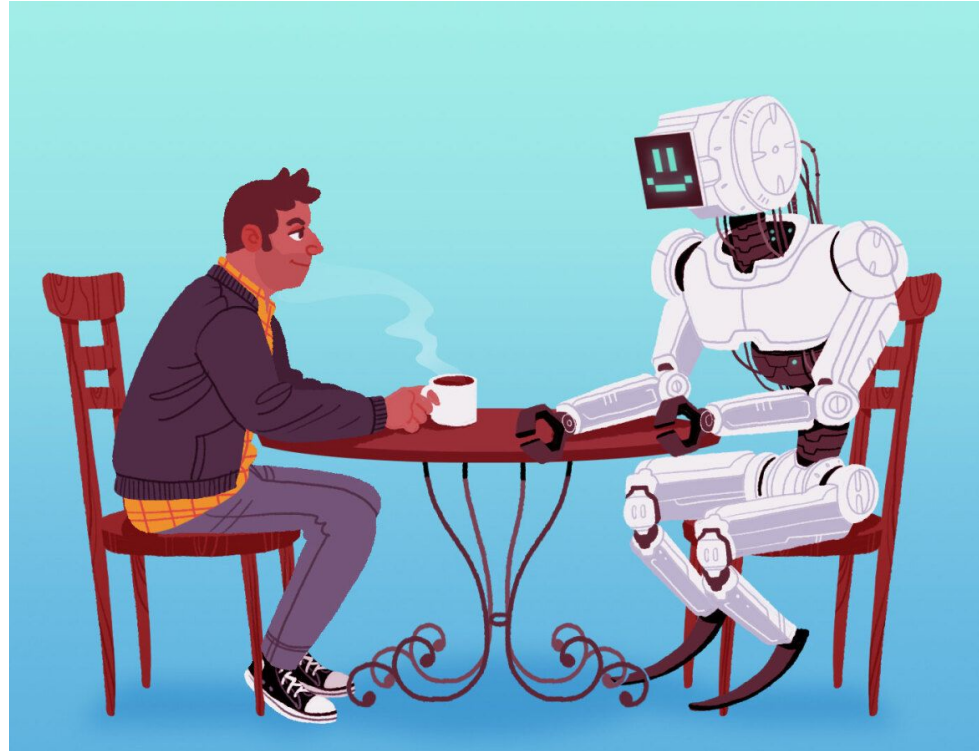
VI. Social Impact from Intimate Relation - I

A. Changing Social & Emotional Dynamics

CPEs are redefining companionship, mitigating feelings of loneliness and isolation. Interactions with CPEs can provide emotional support, potentially improving mental health outcomes

B. Dependency

As humans grow more reliant on CPEs, it triggers discussions about dependency and personal independence.



VI. Social Impact from Intimate Relation - II

C. Ethical Considerations

Intimate relationships with CPEs bring up ethical dilemmas, like potential exploitation and dehumanization of both human & CPEs, unwanted behavioural influence.

D. Socio-Economic Transformation

As CPEs become more prevalent, there could be substantial changes in human interaction, societal norms, employment patterns, and economic disparities like in care industries.



VI. Social Acceptance of Intimate Relation with CPEs

A. Public Opinion and Cultural Factors

Acceptance of intimate relationships with CPEs varies across cultures and societies, influenced by factors like ethics, trust, and cultural acceptance like negative public opinion around industrial robots in Europe.

B. Legal and Regulatory Framework:

Existing laws and regulations do not cover the nuances of relationships with CPEs, bringing need for legal adaptation and establishment of appropriate regulations.



VII. Future Possibilities and Challenges

Future directions for cyber physical entities

Improved emotional sensitivity and non-verbal cues

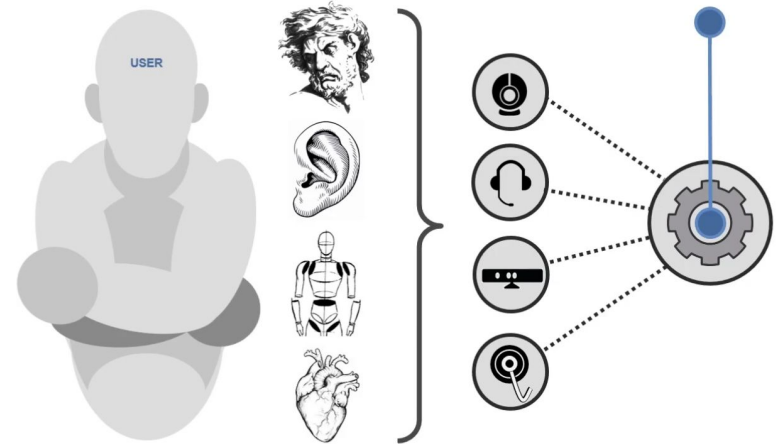
- Reading user's verbal + non-verbal cues highly accurately to understand their emotional state and personality
- Cyber physical entities getting closer to “thinking and feeling”

Haptic and sensory feedback

- Possible to provide physical sensations to the user, enhancing sense of intimacy and immersiveness of interaction

Increased customization

- Users can customize the personality and behavior with detail to their liking



VII. Future Possibilities and Challenges

Due to the newness of the phenomenon, effects and consequences can only be speculated

Emerging challenges and questions may be...

Data Ethics

- Use and collection of user data

Social Implications

- Possible reduction of human-human interactions -> risk of reclusion
- Social consequences and costs of this

Emotional Effects

- Can a replica replace real human interaction and need for intimacy





Debate Structure (**Week 5~7**)

Time	
20 minutes	Presentation from Team A>(*example)
20 minutes	Discussion in each team (break-out room)
5 minutes	Team B* Debate (*example)
5 minutes	Team C* Debate
10 minutes	Q&A, discussion, 2ppl from team A* to facilitate the class discussion
10 minutes	Thinking time
3 minutes	Team B Rebuttal Time
3 minutes	Team C Rebuttal Time
10 minutes	Q&A, discussion, 2ppl from team A* to facilitate the class discussion
5 minutes	Voting Time

Choose 2 persons from your team to facilitate the class discussion