

# Embrace Angels

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### Introduction.



**Can Robots and humans embrace each other? Can an AI learn to embrace?** Embrace Angels calls for profound collective, intimate experience among humans and robots. Increasingly we embrace hug, care and sex-bots. These bots lack the necessary empathetic, tuning and safe (Asimov) qualities to perform as equals in intimacy. Can we imagine new rituals for embracing each other and sensing intimacy and reciprocity? Embrace Angels critically rewires our cyborg bodies for a sustainable, collective intelligent bio-technical embracing ritual, for inclusive planetary love.

### What is an embrace?

Worldwide, a human embrace is a ritual for well-being, love, sex, comfort, joy and reconciliation. In this ritual, we move towards each other, while reciprocally coordinating our (unpredictable) movements. Trust is essential: we take risk of pain, discomfort and injury (e.g. by (accidental) colliding, unwanted touching, squeezing too hard, letting go too quickly). We empathetically play with expectation, imagination and body boundaries, and personal meaning. Every embrace is unique. Interestingly brain research shows that we also feel embraced when seeing others hugging (Mirror-touch). As artists we call this complex, amazing interplay in different cultural contexts: **EMBRACE INTELLIGENCE**.

**Embracing Robots.** Although humans can project empathy on robots, robots cannot empathetically attune to unpredictable human behavior; nor take the initiative to hug (due to Asimov's first law preventing risk of collision with humans). They must be designed to stay physically distant (e.g. autonomous robot 'Spot'): we embrace **passive waiting robots** (e.g. 'Huggiebot' (Max Planck Institute 2023)). Scientists claim this will cause empathy and reciprocity to become extinct.

**This leads to critical questions:**

**Do we still dare to hug people in the future? Can we imagine a reciprocal kind of embrace for humans and robots, as fellow members of planetary empathy? A sustainable inclusive embrace ritual, with fluid body-machine connections?**

**Embrace Angels emerges in collaboration with partner Prof. Steve Benford, Mixed Reality Lab (MRL), University of Nottingham (UK).** MRL conducts interdisciplinary research into shared **computer interaction** in public spaces; collaborating with departments for visual arts, dance, music, social sciences. It develops innovative mixed realities of VR, AR, and brain-computer interfaces (BCI), industrial and autonomous Robotics, and Artificial Intelligence (AI). Collaborations with artists include Blast Theory (Golden NICA award at Ars Electronica), and international shows (Venice Biennale).



Sketch spatial set up: Robot; Embracer, Spectators. *N.B.: This sketch is made through animation but the work itself is NOT an animation.*

### Concept Ritual: Embrace Angels

Can humans and robots embrace? Can an AI learn to embrace? Embrace Angels is an intimate collective ritual for humans and a robot to embrace, with fluid boundaries between body and technology, in human-machine synthesis.

In the collective Embrace Angels ritual, a Robot (+AI) and public Participant (+AR) slowly walk to each other on a catwalk, watched by Spectators (+Body-sensors). Together they experience a unique embrace, emerging from interdependent actions: Spectators mutually touch & connect to manipulate the Robot; while the Participant's movements make the Robot realtime visible; and the RobotAI learns to embrace. Together they play with intimacy and empathy; safety and (un)predictability; reciprocity, risk and trust. All Angels share an intimate poetic journey, for a future planetary embrace.

**Technology.** We explore an innovative social-bodily human machine synthesis with the following technologies:

- ['Embracer']: For the **AR headset**, we explore Apple Vision Pro headsets (<https://www.apple.com/apple-vision-pro/>).
- [Spectators]: We use **Body Gesture Sensors** for recognizing collective bodily behavior.
- [Semi-autonomous Robot 'SPOT']: is a 'safe' robot design with a 360 degree view that can walk semi-autonomously (<https://bostondynamics.com/products/spot/>) with an:
- [AI *EMBRACE learning System*]: For the **AI Machine Learning system** we build on Max Planck Institute research 'Huggiebot' (2023) and collaborate with its researcher A. Block; for speculative correlations between (un)predictable human embracing gestures.



**Why SPOT?** As an actor, the media icon SPOT seems for some intimidating and aggressive-looking, while for others its resemblance to a dog provokes an empathetic projection. This semi-autonomous robot 'SPOT', developed by Boston Dynamics, performs tasks in human endangering situations, e.g. military conflict; surveillance; space colonization on Mars. We however believe that in the context of current global wars and climate changes, we crucially need empathy, care, trust and reconciliation. Our SPOT is a **centaur**, with **soft hands** and a **warm chest** for a worldwide sustainable embracing ritual.

**Ethical Experience Design.** We explore a ritual in which a Robot, a Participant ('Embracer') and Spectators strongly sense each other's presence, with personal and collective influence *on each other*, each in their own strength. We aim to facilitate teamwork, as well as individual agency to ensure one's own safety - both in interaction with humans and AI. We (artists; or volunteers) explain and guide this public ritual. Dialogue with participants is about the questions: "How does hugging with a robot feel like? How does your body feel in this embrace, co-directed by human and robot behavior?"

*Being exposed* while robot-hugging in public space can lead to different forms of intimacy and/or (dis)comfort. In previous works (Saving Face 2012, EEG KISS 2014, Kissing Data 2018), we found the right conditions for intimacy of kissing and caressing in public settings (K. Lancel "Can I Touch You Online?" (2023)).

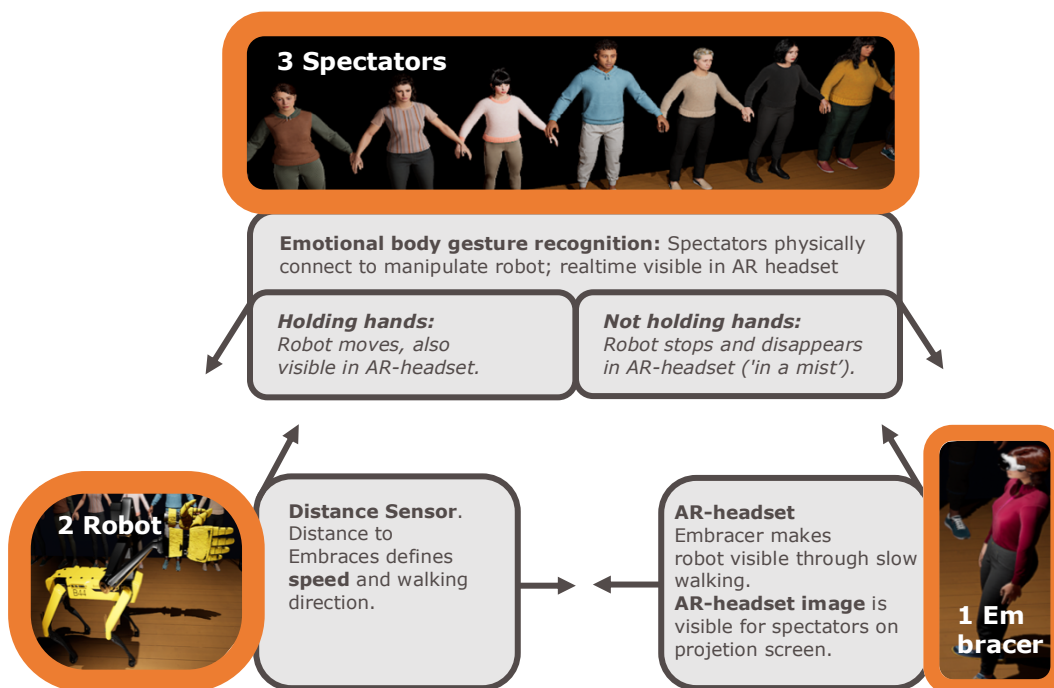
**Embrace Angels** is a trans-disciplinary interactive performance installation that combines research from media art, XR, science, design, technology and philosophy. The artwork is a playful, spatial, collective arrangement; a new perspective on joint public-AR-robot interaction. The art-science research explores: a) Neuropsychological research into empathy between people and robots; b) Robotics + AI in public interaction; c) Bodily perception of technologically mediated touch.

## Interaction, Relations

**Basic elements of embracing:** 1) **Seeing** each other; 2) **Walking, moving** towards each other; 3) **Hug** (putting arms around one another); 4) **Letting go**. With reciprocal tuning of movement and experience, through **Dialogue**.

GO TO THIS LINK: <https://www.youtube.com/watch?v=gKuq8nT3trs>  
for the visual animation with illustration of concept.

**Spatial staging:** 1) **Embracer**, 2) **Robot**, 3) **Spectators**. The Spectators sit around a long-shaped playing field (+15 meters); the Robot and Embracer move towards each other from both ends. Each performance can consist of multiple sessions for min. 5 / max. 150 participants (1 Embracer per session). Performances are guided by the artists or trained hosts.

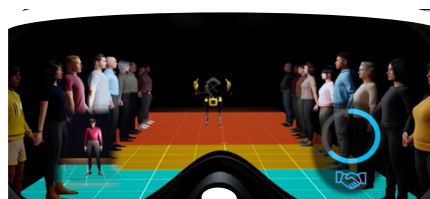


**Interplay** Teamwork. Embrace Angels is a choreography for several people and a robot, who depend on each other's actions for the shared experience of embracing. It is an embrace in **slow-motion**: the interaction design provokes slowness, for awareness on all different aspects of hybrid embracing.

**1. Embracer** sees the Robot in the AR headset; and walks towards the robot in the physical space. By walking slowly the robot remains visible; when walking fast the robot disappears into a mist. The AR headset shows real-time: a) the Robot; b) Spectators; c) an insert image of the Embracer (via camera in Robot); d) feedback from Spectators.

**2. Robot** walks to the Embracer - and defines its own walking speed.

**3. Spectators** determine whether: a) the Robot can walk towards the Embracer; and whether b) the Embracer can see the robot in the AR headset. They do this by holding each other's hands (measured with Body Gesture Recognition sensors). When releasing hands, the Robot stops in the physical space and disappears into the AR headset.



**AR headset.** Real-time visible in AR headset: a) the Robot (middle); b) Spectators (left, right); c) Spectator's feedback of movement in circle (bottom right); d) an insert image of the Embracer (via camera in Robot).