

***Re:Melt*: A Dance Film about a Human-Algorithm Interaction**

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Abstract

Re:Melt is a short dance film capturing the contact improvisation between a human performer and a 3D printed wall generated from an AI algorithm. This partnership is shown through the lens of digitally manipulated video to emphasize the constantly flowing nature of a supposedly static object. Equally important is the collaborative partnership rooted in practice-based research that led to the creation of *Re:Melt*. By reflecting on both the circumstances leading to the partnership and the resulting artwork, the collaborators share their changed insights on how humans might interact with AI.

What is *Re:Melt*?

Re:Melt is a short experimental dance film capturing the interaction between a human performer and a 3D printed wall generated from an AI algorithm. The title is derived from the way the wall looks as though it is a constantly melting block of ice. In the film, Kim engages in a contact improvisation with the wall. Each organic curve and crook becomes a physical representation of the algorithm that generated it. Under the direction and video editing of Bahng, the simple duet transforms into an intimate and surreal look into a human placing their trust and affection into unexpected places. *Re:Melt* can be viewed online at <https://youtu.be/Xn7JrCA5TeM>.

A Chance Meeting

The collaborators first made contact in September 2018 due to an e-mail featuring Bahng's presentation on critical empathy and VR. At the time Bahng and Kim were PhD candidates in Australia and Hong Kong respectively. Both were examining the use of narratives to convey empathy in VR environments through a practice-based research

approach. After a brief correspondence, Jon McCormack kindly arranged for Kim to visit SensiLab in April 2019. While discussing approaches to practice-based research, Bahng and Kim decided that they needed to collaborate to create artworks in order to find answers that they had been discussing. *Re:Melt* resulted from their exploration of how to challenge the way movement can be used in a digital narrative.

Algorithms, Robots and 3D Printing

At the heart of *Re:Melt* is a wall designed by Roland Snooks of RMIT/Studio Roland Snooks for Sensilab. This unique wall is at once an organic living object and an inorganic inanimate creation generated from computer algorithms. Initially simplistic in its use of clear material, the wall changes personality throughout the day depending on the type of light coming through it. Furthermore, it feels like it is constantly melting and reshaping itself, simultaneously cold and warm.

To create the wall, Snooks uses a "multi-agent swarm algorithm" that combines two algorithms which generate the curves (RMIT n.d.). The design was then 3D printed robotically with a clear polymer to produce most of the walls for a meeting room at SensiLab (Studio Roland Snooks 2017).

Contact Improvisation with Non-Humans

From a dance perspective, the wall has many curves and niches that can cradle the body in a supportive manner. Putting weight on the extruded plastic created a sensation that was similar to doing contact improvisation with a solid and understanding partner. For Kim, the wall alternately guided the body in what direction to go next and provided a cushion for the body to melt into. The cycle of internal and external feedback led to feelings of closeness and wonder towards the algorithm that had

generated the curves. Gradually the authors started to treat the wall as a sort of living entity rather than a static prop.



Fig. 1. *Re:Melt* rehearsal, 2019, Sojung Bahng and Eugenia Kim, still image, Copyright belongs to the authors.

Generative Filmmaking for Dance

Influences for the filmmaking process included the early works of Maya Deren, Anna Halprin and Yvonne Rainer, and Bahng's generative interactive film, *Differential of Memory* (2015-2016). *Differential of Memory* had featured a solo dancer and was made in a collaborative manner. Various digital effects were used to further extend the choreographic possibilities.

For Bahng, it was easy to sense just how much Kim resonated with the wall as a partner. The intentions of Kim's movements gave the sensation of an organic and fluid two-way interaction. Based on this partnership, Bahng was reminded of ice slowly melting into an ocean harbour reflecting the night lights of a cityscape. She chose to shoot using extreme close-ups and low angles in order to capture the intersubjective connectivity between human, non-human and an embodied frame of view. Bahng was also interested in how digital technology could connect tangible objects, intangible motion and bodily embodiment.

Reflections and Conclusion

In hindsight, the process of collaboration was extremely instinctive and organic. By Kim entrusting Bahng with the cinematography and editing while Bahng danced "with" Kim during shooting, each collaborator was able to focus on and immerse themselves in their respective roles. Further trust was built up through a mix of collaborative decision-making and artistic

independence. The spontaneity of the collaboration was also very exhilarating.

A major impact of *Re:Melt* is that it has changed how both authors approach collaboration, dance films and the forms in which humans can interact with or be impacted by AI. For Kim, the project has raised the question of how AIs can be represented in physical forms and expand the definition of multispecies relationships. Both creators intend to further explore the possibilities presented in *Re:Melt* by creating variations on the film and derivative works.

References

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Biographies

Eugenia S. Kim is an interdisciplinary creator and researcher. She is an artist for Leonardo21 and Lecturer (Performing Arts Research) at the Hong Kong Academy for Performing Arts. Kim received her PhD from the School of Creative Media, City University of Hong Kong in 2020 and holds degrees from University at Albany and Rensselaer Polytechnic Institute.

Sojung Bahng is an award-winning artist, new media filmmaker and researcher. She is a Postdoctoral Fellow and Instructor in the School of Journalism and Communication at Carleton University. Bahng graduated from the SensiLab at Monash University in 2020 and holds degrees from the Korea Advanced Institute of Science and Technology (KAIST) and Korea National University of Arts (K-Arts).