

An Artist Residency with Thermal Painting for A Multi-Sensorial Exhibition

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ABSTRACT

This is a future proposal for an artist residency program centered around the concept of Thermal Painting we would like to work on, aiming to foster collaboration between artists and researchers in the exploration of multi-sensorial artistic experiences. The residency plan involves inviting an artist to create original works using thermal painting techniques, where temperature feedback because of painting will serve as a fundamental aspect of the creative process.

KEYWORDS

Thermal painting, Artist residency, multi-sensorial experience, future work

1. INTRODUCTION

Thermal sensation can induce feelings and use of thermal feedback in human-computer interaction has the potential to enhance realism and presence or arouse emotions [1]. Thermal painting is a novel artistic approach that combines the elements of color, temperature, and sensory feedback to enhance the creative process and produce unique visual experiences. It uses an innovative interface that provides heat feedback to artists in real-time, corresponding to the color temperature of the paints being used. By leveraging an external heater and mapping color to corresponding temperature values, Thermal Painting offers artists the ability to "feel" the temperature of the colors they paint, enhancing their sensory perception during the creative act.

Drawing upon research on human color perception, the mapping of color and temperature in Thermal Painting is designed to align with how individuals subjectively perceive and interpret color. Works like [4] showed that there is a color-temperature association with the color warm-cold spectrum. By providing heat feedback that corresponds to the color temperature, artists are encouraged to make intentional color

choices and explore the interplay between temperature, color, and the resulting artistic outcome. The objective of the proposed artist residency is to investigate the dynamic relationship between temperature and artistic expression, providing a platform for artists to experiment with the unique possibilities offered by heat as a sensation. Through this collaboration, the residency aims to facilitate the artist's exploration of color choices, brushwork, and overall artistic vision influenced by the thermal aspect of the medium.

Furthermore, the culmination of the residency will be a public exhibition where the created artworks will be displayed. Notably, the exhibition will be designed to engage the public through a multi-sensorial experience. Visitors will have the opportunity to not only visually appreciate the artwork but also feel the temperature of the paintings, thereby immersing themselves in the artists' creative world.

It is important to highlight that the artist residency proposed in this paper is a plan presenting an opportunity for artists and researchers to collaboratively push the boundaries of artistic expression and sensory perception. By integrating thermal painting techniques into the residency program, participants will contribute to expanding the understanding of how temperature sensitivity can impact artistic outcomes and create new avenues for artistic exploration. The residency will offer opportunities for artists and researchers to collectively investigate the effects of temperature feedback on artistic expression, color perception, and audience engagement. By documenting and analyzing the outcomes of the residency, valuable insights can be gained, contributing to the existing body of knowledge on the intersection of art, technology, and sensory perception.

1. 2. AN ARTIST- RESEARCH COLLABORATION

Our group is formed of diverse backgrounds. Supratim Pait, is a Master's student in Digital Media with experience in fine arts, crafts and painting alongside working with design as a User Experience Designer. He is an artist who works with new

media and traditional forms alike, specializing in painting. He is passionate about use of tech for diverse forms of creative expression. Sosuke Ichihashi is a Ph.D. student in Digital Media. He focuses on inventing novel thermal feedback systems, exploring the relationship between thermal sensations and emotions, and creating installations where people's emotional/social interactions are mediated through interactive thermal feedback. He works with creating interactive thermal feedback system to augment interpersonal and human-computer interactions. Dr. Noura Howell is an Assistant Professor of Digital Media at Georgia Tech whose design research focuses on algorithmic ways of knowing emotion that use biosensory data about people's bodies and behaviors. She has a rich background in tangible interaction design combining custom sensor technologies, machine learning, and design research working with code, circuits, wood, e-textiles, and sound. Her work challenges dominant techno-logics of data and explores alternatives.

We identify ourselves occupying a unique position that lies between the realms of artists and researchers. We identify as practitioners of Digital Media, where we acquire technical knowledge and skills that allow us to engage with cutting-edge technologies and explore their potential in artistic and creative expression. Our background in digital media provides us with the ability to approach art creation through an analytical lens, blending creativity of an artist with scientific inquiry of change in creative processes due to an additional sense of thermal feedback. Our role as researchers within this residency program is not only to document and study the artists' practices but also to actively engage in the process alongside them. We are both observers & participants, utilizing our technical expertise to support artists in their experimentation and providing a critical lens to evaluate the outcomes. Through this dynamic engagement, we create a relationship where artists inspire our research, and our research enriches their artistic practice.

3. THE ARTIST

We'll be looking at recruiting five fine artists for this residency which will be essential to ensure a diverse and well-rounded exploration of thermal painting. Fine artists bring a deep understanding of traditional art practices, such as brushwork, color theory, and composition, which can serve as a strong foundation for incorporating heat as a new artistic element. Their expertise in working with brushes can facilitate a seamless transition to the exploration of thermal painting. By involving a group of fine artists with diverse artistic backgrounds and styles, the residency can foster a dynamic and collaborative environment where artists can learn from each other, share their insights,

We have built a prototype that makes this possible. The prototype enables the artist to physically paint with a brush and experience temperature feedback through an external heating device according to the color they paint.

Rather than relying solely on their own subjective perception of color, artists can now observe the dynamic relationship between their brushstrokes and the temperature-driven feedback. The ability to control and manipulate the temperature through heaters or other devices allows artists to have a direct influence on the visual outcomes of their artwork. This interactive process encourages artists to explore the interplay between intention, experimentation, more responsive and interactive approach, fostering a deeper connection between the artist, the artwork, and the viewer.

The artist's perception of heat while painting can influence their brushstrokes and artistic choices. The sensation of warmth or heat can evoke different emotional and physical responses, potentially influencing the artist's energy, pace, and the overall expressive quality of their brushwork. Heat can evoke sensations of intensity, passion, or vitality, which may be translated into the artwork through bold and vigorous brushwork. Conversely, a cooler temperature may inspire more delicate and controlled strokes. The physical sensation of heat can deepen the artist's connection to their creation, allowing them to establish a more intimate and personal relationship with the artwork as it evolves under their touch.

4. THE VIEWER

Previous work [2] discusses a system that provides thermal feedback to users based on their visual attention. When the viewer looks at different objects on a display, they will feel a sensation of heat or cooling based on the object they are looking at. The system is designed to reproduce the unique glare of heat sources such as the sun and fire, which are typically accompanied by light and heat. The goal is to create a more immersive experience for users by providing them with a more realistic sensory experience. The system uses a non-contact thermal presentation method that utilizes infrared rays and a shutter mechanism consisting of fins. The fins can be adjusted to produce different intensities of temperature based on the angle of the fin. This allows for a high-speed and responsive system that does not require physical contact with the user.

Our prototype, based on these principles produces gaze based non thermal contact heat feedback that changes temperature in less than a second. As it is based on the viewer's gaze, different regions of an artwork would make the viewer feel different temperatures.

Novel technology can make art more emotionally engaging and stimulating, especially abstract art that is often open to interpretation. Participants expressed that experiencing art with the combination of mid-air haptic and sound was immersive and provided an up-lifting experience of touching without touch. [3] The expected end step of this future residency program would be thus an exhibition that would engage public viewers. Our exhibition combines this to use thermal painting with a multi-sensory approach to viewer

engagement. By integrating gaze-based eye tracking and temperature feedback, we empower viewers to explore the artwork not only visually but also through embodied sensations.

4. 5. ANTICIPATED OUTCOMES

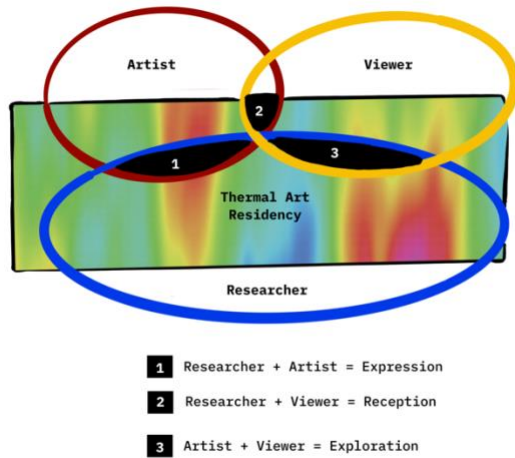


Figure 1: One possible representation on the relationships and overlaps in the proposed thermal painting art residency.

As researchers, observing the artists throughout the residency we can focus on several aspects to analyze and gain insights into their creative processes, artistic development, and the impact of thermal painting on their practice. This could involve assessing how the participating artists adapt to and explore the use of thermal painting within their established artistic practices.

Further it could also involve investigating the conceptual development of the artists' work throughout the residency. This includes exploring the themes, ideas, and narratives that emerge in their artworks and examining how the incorporation of heat influences or shapes their conceptual exploration.

We can further analyze the artists' individual artistic expressions and styles within the context of thermal painting. This includes exploring how the artists' unique voices are reflected in their brushwork, color choices, and compositions when working with heat as a sensory element.

An important exploration and outcome would be to encourage the artists to reflect on their experience with thermal painting

and its impact on their artistic practice. This involves conducting interviews or facilitating discussions where artists can articulate their thoughts, observations, challenges, and insights gained during the residency.

As researchers studying the viewers' experience in the exhibition, we would be focusing on understanding and analyzing their responses to the thermal paintings and the incorporation of heat as a sensory element. Some areas of study and expected outcomes could include how viewers perceive and engage with the thermal paintings through the sense of sight and temperature. This could involve exploring the emotional and physical responses elicited by the heat, the degree to which it enhances the immersive quality of the artworks, and the role it plays in shaping viewers' overall experience. Through interviews, surveys, or qualitative analysis, we can explore how the incorporation of heat affects viewers' emotional engagement with the artworks. By observing and analyzing viewers' behaviors and responses, we can explore the extent to which the incorporation of heat encourages active participation and deeper engagement with the artworks. This could involve studying the duration of viewer gaze, their exploration of different temperature zones within the artwork, and any physical or verbal reactions expressed.

We can also explore the narrative associations, symbolism, or personal connections viewers establish with the artworks. By analyzing and interpreting the data collected from viewers' responses, we can generate insights and knowledge that contribute to the field of digital media, sensory aesthetics, and the intersection of art and technology.

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