

Floral Design + AR/XR

A Trans-disciplinary Floral Design with Augmented/Mixed Realities

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Abstract

Floral art utilizes plant materials and flowers to create a visually appealing and eye-catching composition or display. The earliest known flower arrangement proceeds to ancient Egypt. Egyptians decorated with flowers as early as 2,500 BCE¹.

The Gutenberg Bible in the 1450s is the earliest major book printed using mass-produced movable metal type in Europe. It adopted illustrated flowers to value the printed book's high aesthetic and artistic quality. In the modern era, floral design professionally incorporates floral elements using line, form, space, texture, color, balance, proportion, rhythm, contrast, harmony, and unity.

Floral Design + CODE with AR/XR reinterprets traditional art and floral design into a generative floral system. It employs mathematical expressions, computer algorithms, sound, and video libraries. It is a new visual language integrating computational floral art, textile design, type, typography, Interactive Art, augmented reality, and digital fabrication with floral elements.

It allows the audience to experience immersive floral images using space, projection, and computer vision. This narrative conveys diversified visual messages inspired by nature, healing through arts, and exploring philosophical and religious interpretations regarding life, death, and love.

This visual research suggests a new trans-disciplinary graphic art integrating floral elements and computer vision with physical computing and immersive space.

1. "The Ancient History of Flower Arrangements.", (2019), Chicago, IL. June 21, 2023, <https://bouqs.com/blog/history-of-flower-arrangements>

Category: Experience Design, Generative Design, Experiential Graphic Design,
Keywords: Augmented Reality Mixed Reality, Creative Coding, Play, Immersive Experience, Computational Visualization

Introduction

The Bible is one of the most influential and best-selling books ever. It has greatly influenced literature and history in the Western world. The Gutenberg Bible in the 1450s is probably the most famous Bible in the world. It is the earliest major book printed using mass-produced movable metal type in Europe¹. It adopted illustrated flowers to value the printed book's high aesthetic and artistic quality (Figure 1).



Figure1, The Gutenberg Bible, the Morgan Library & Museum, NYC, NY

In the modern era, floral Design incorporates floral elements using line, form, space, texture, color, balance, proportion, rhythm, contrast, harmony, and unit².

1. "Gutenberg Bible," London, England, June 21, 2023, <https://www.bl.uk/collection-items/gutenberg-bible>

2. Johnson, James, "Principles of Design: A Course in Design Production". Austin, Texas, 2014.



Figure 2, Left: Valentines, 2005, Right: I WANT IT ALL, 2006, by Marian Bantjes,

This research explores new floral Design using creative coding, sound, augmented and mixed realities and suggests novel and immersive floral experiences.

Approach

Floral typography is the technique that combines typography, calligraphy, and lettering to create dynamic, “flourishing” design³. With the help of floral elements, It makes very tempting and vivid artworks in which the typography seems to be shaped by plants and flowers (Figure2). It enables to convey of visual messages in artistic ways. The visual styles of this research were inspired by Marian Bantjes’ typographic arts using natural floral materials. *Love* aesthetically delivers the meaning of love using floral elements (Figure 3).

Floral Design + AR/XR reinterprets traditional floral art into computational graphic art. It employs mathematical expressions, computer algorithms, sound, video, and computer vision libraries. It is a visual generative system integrating computational floral arrangements, textile, type, typography, sound interaction, and augmented and Mixed Realities with floral elements.

This narrative conveys diversified visual messages inspired by

3. Akhter, Aquil, (2009), “67 Gorgeous Examples of Floral Typography.” Smashing Magazine, June 21, 2023, <https://www.smashingmagazine.com/2009/05/gorgeous-examples-of-floral-typography>



Figure3, Love, Seed font: Times New Roman, Geomerative Library by Ricard Marxer, Processing, by Yeohyun Ahn, 2022

It is a visual generative system integrating computational graphic art, textile, typography, Sound Interaction, and augmented and Mixed Realities with floral elements.

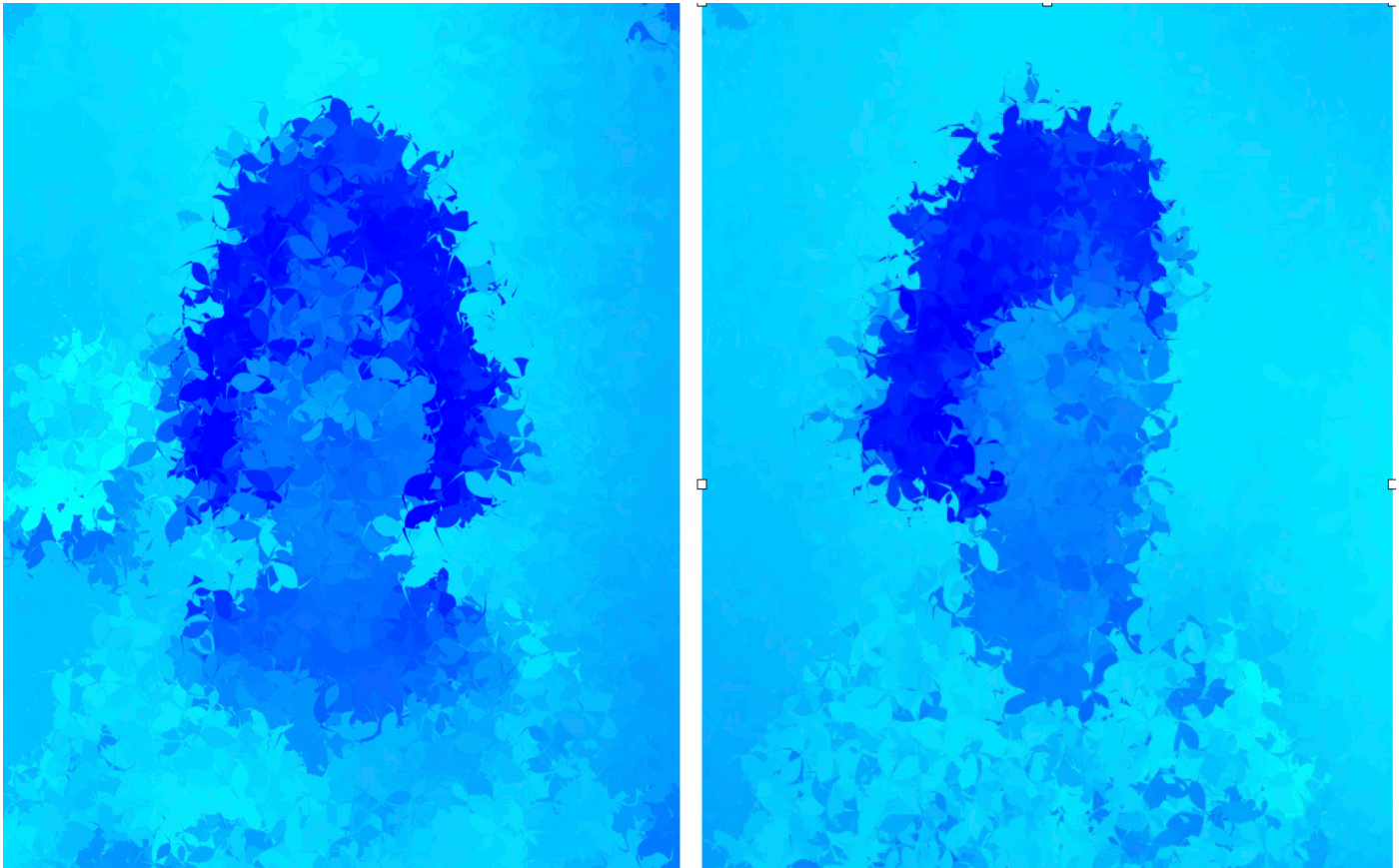


Figure 4, *Floral Design + AR*, 2023, by Yeohyun Ahn

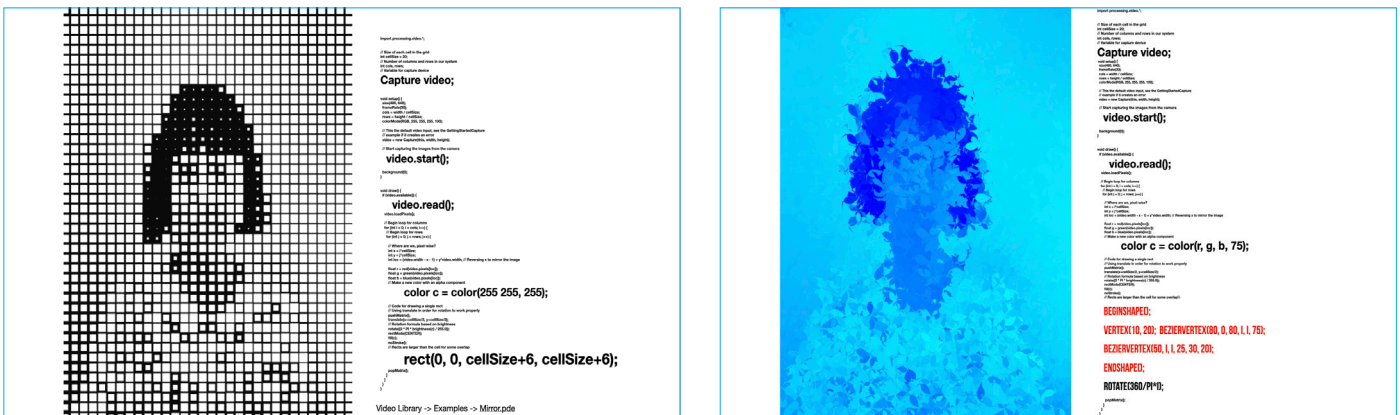


Figure 5, *Tutorial Code of Mirror from Video Libraries in Processing*, by Daniel Shiffman

healing through arts, and exploring philosophical and religious interpretations regarding life, death, and love. Conceptually it was inspired by Korean Contemporary Christian Music, 꽃들도, Even Flowers, in English. It is a part of the lyrics,

A fountain of life springs up here, When tears pass, Sooner or later it will bear fruit, The sound of laughter will overflow, The flowers, the clouds, the wind, the open sea, The sky opens on that day, Everyone will see, Finally the flowers bloom.

Initially, it was created for the solo exhibition, *The Bible + CODE* // at Trinity international university, Deerfield, IL, in 2019.

Augmented reality is an interactive experience that enhances the real world with computer-generated perceptual information. Using software, apps, and hardware such as AR glasses and web cameras, augmented reality overlays digital content onto real-life environments and objects⁴.



Figure 6, *Floral Illustration + XR*, 2023, by Yeohyun Ahn

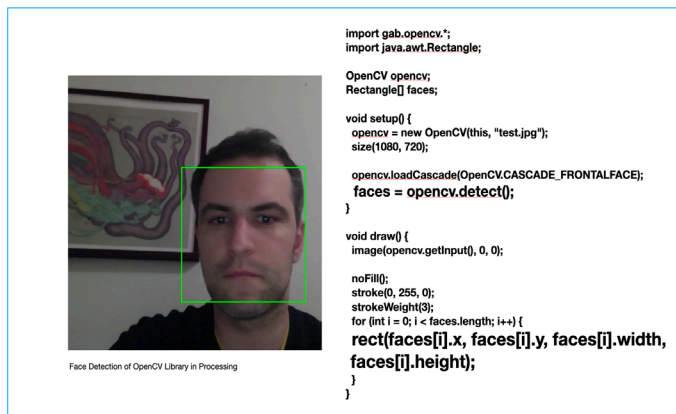


Figure 7, *Tutorial Code of OpenCV Libraries in Processing*

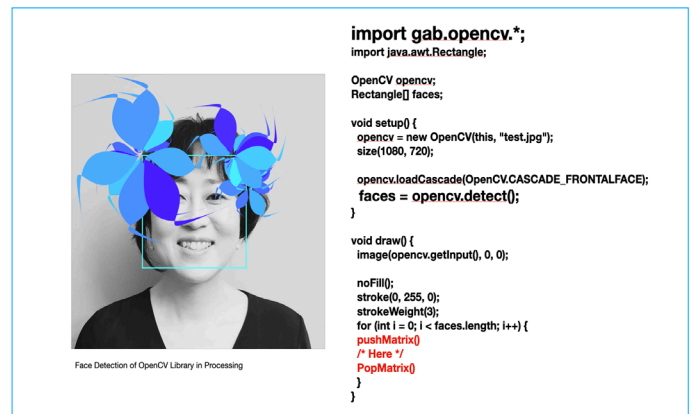


Figure 8, *Floral Illustration + XR Development Process*

Floral design + AR is an immersive floral experience as an argument reality (Picture 4). It used the Mirror of Video Libraries in Processing developed by Daniel Shiffman (Figure 4).

4. "What is augmented reality (AR)?" SAP.com, June 21, 2023, <https://www.sap.com/products/scm/industry-4-0/what-is-augmented-reality.html>

Mixed reality blends physical and digital worlds, unlocking natural and intuitive 3D human, computer, and environmental interactions⁵. Floral Design + XR is a series of generative self-portraits using the profile image. It uses Face Detection of OpenCV Library in Processing. It automatically detects the facial area of any photos (Figure 7). It replaced the sample image to the profile images in the same code (Figure 8).

Implications

You are beautiful is a self-reflection from the author constantly suffering from lacking self-esteem. It is self-comfort using computer vision. It is implemented by Face Detection of OpenCV Library in Processing again (Figure 9). *Frida Kahlo* was a Mexican painter known for her many portraits, self-portraits, and works inspired by nature. Floral *Selfie + Frida* is a homage to her paintings (Figure 10).

Hope is a feeling of expectation and desire for something to happen. *HOPE* expresses a positively growing floral object in adverse situations. It used Geomerative Library, and a seed font, Avenir Next Ultra Light, in Processing (Figure 11). *HOPE + AR* is another augmented reality with hope using the Mirror Library of Processing (Figure 12).



Figure 9, *You are Beautiful*, 2023, by Yeohyun Ahn



Figure 10, *Floral Selfie + Frida*, 2023, by Yeohyun Ahn,

5. "What is augmented reality (AR)?" SAP.com, June 21, 2023, <https://www.sap.com/products/scm/industry-4-0/what-is-augmented-reality.html>



Figure 11, HOPE, 2022, by Yeohyun Ahn,

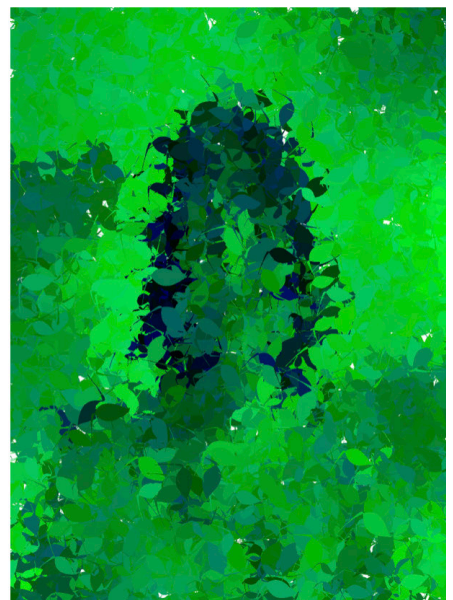
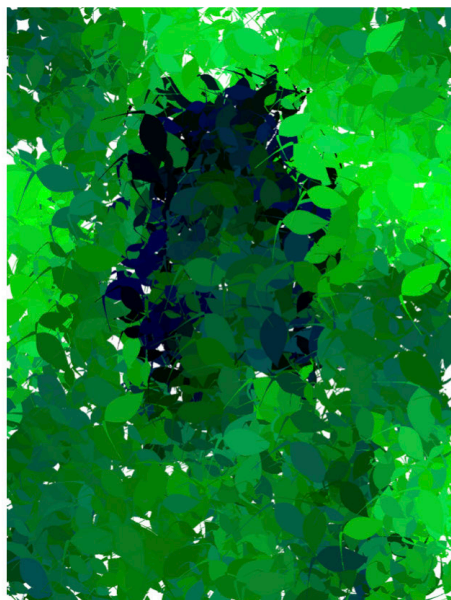


Figure 12, HOPE + AR, 2023, Yeohyun Ahn

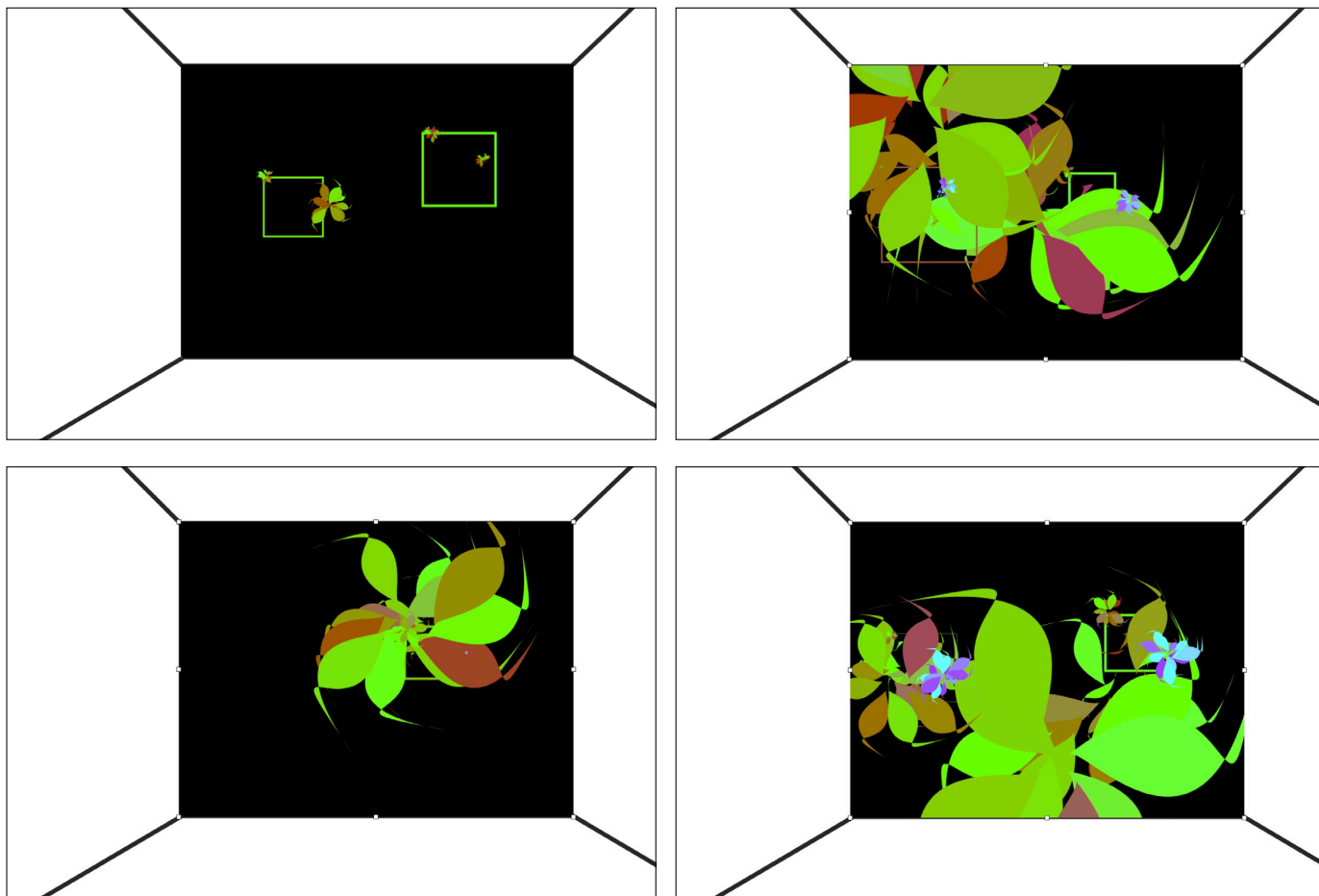


Figure 13, *A Garden Where Hope is Growing*, gallery plan, 2023, by Yeohyun Ahn,

A Garden Where Hope is Growing is an immersive installation for the audience to interact with generative floral art in a blank and dark space. It is a co-creation with my 10-year child, Scarlett Jin. The small rectangular shape indicates where she plays. The scales of the flowers increase with the real-time sound frequency values. It suggested another mixed reality as a play with the interaction with the audience (Figure 13).

Conclusion

Floral Design + AR/XR suggests a new trans-disciplinary floral design integrating floral elements and computer vision with web cameras and physical computing. It delivers creative augmented and mixed realities using lower-level computation. This research contributes to experiential Graphic Design to move forward from software or app-oriented AR/XR developments to the creative freedom of AR/XR with coding directly. Ultimately it suggests the future gallery installation as a play with the audience interaction in an immersive space or environment.

Resources

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"What is mixed reality?," Microsoft.com, Seattle WA, June 21, 2023, <https://learn.microsoft.com/en-us/windows/mixed-reality/discover/mixed-reality>

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