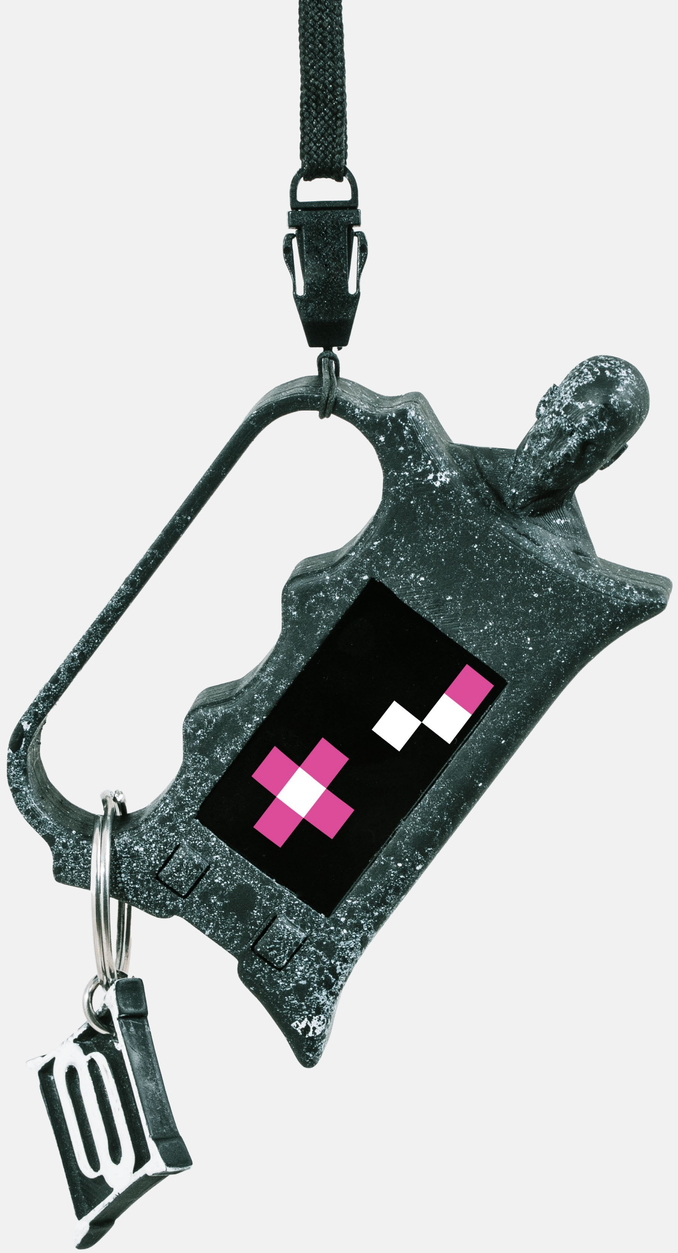
STEVE ZAFEIRIOU

V1.0

Choice



www.choice.stevezafeiriou.com

01

The Artwork

[CHOICE] Interactive Sculpture & Installation

The core concept of “Choice” revolves around the idea that small, consistent actions can lead to significant evolutionary changes over time. By engaging with the artwork, viewers experience firsthand how their movements—representing choices—dynamically alter the visual output, creating a constantly evolving piece that reflects the interplay between individual behavior and collective reality.

What is Choice?

THIS IS THE FIRST PROTOTYPE OF THE INTERACTIVE SCULPTURE “CHOICE” (V1), EXHIBITED AT BRITISH ART FAIR, SAATCHI GALLERY, LONDON, UK (SEPT. 2024).

“Choice” is a multidimensional interactive artwork from the collection “Our Behaviour Shapes Our Reality,” merging Darwinian evolutionary theory with data-driven art. This sculpture employs sensors to capture movements, which are then used to autonomously generate the digital art displayed.

The sculpture connects to an external installation (the “Choice Extention”) via USB to transfer generated data. When connected, the sculpture and installation collaborate to initiate a new “pixelverse” of decisions.

Upon creation, each new generative image is transmitted to the Extension and temporarily stored in a database for 15 minutes. The Extension then generates a QR code that redirects the viewer to a validation UI, where the viewers can choose to validate or discard their creation. Additionally, viewers have the option to save or print their generations. Validated generations are stored permanently, although this feature is experimental.

Each viewer (the “Collector”) has a dynamic profile that includes badges and the ability to view and save their generated digital artworks.

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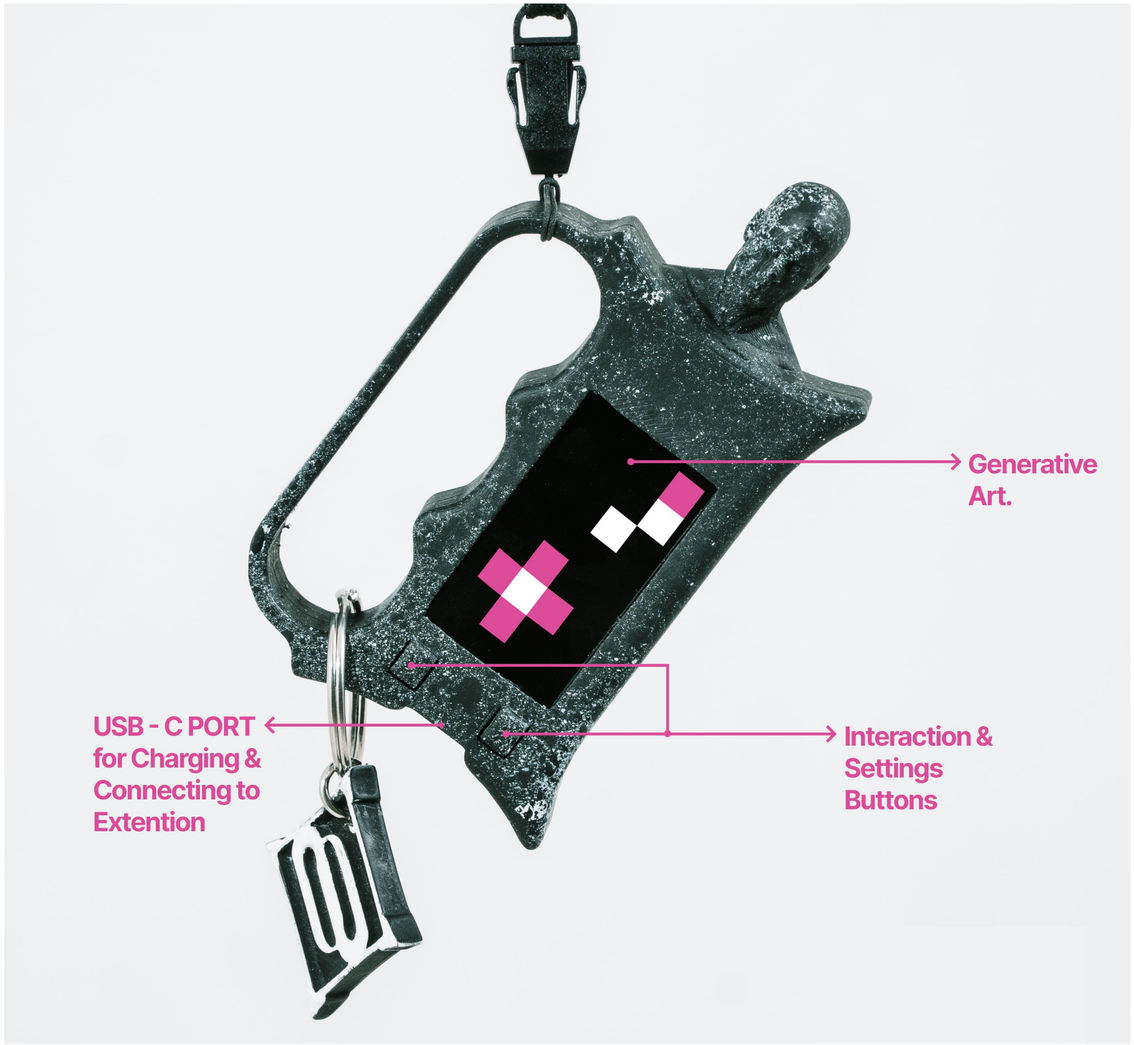
In “Choice,” technology is an integral part of the art itself. Powered by the LilyGo T-Display S3 microcontroller and custom firmware written in C++, the installation processes sensor data, manages interactions, and delivers updates seamlessly over WiFi. Developed with React JS and MySQL, the interactive web application enables a dynamic, real-time experience, reflecting the fusion of art, technology, and human interaction.

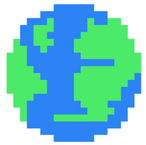
A Data-Driven Sculpture.



005

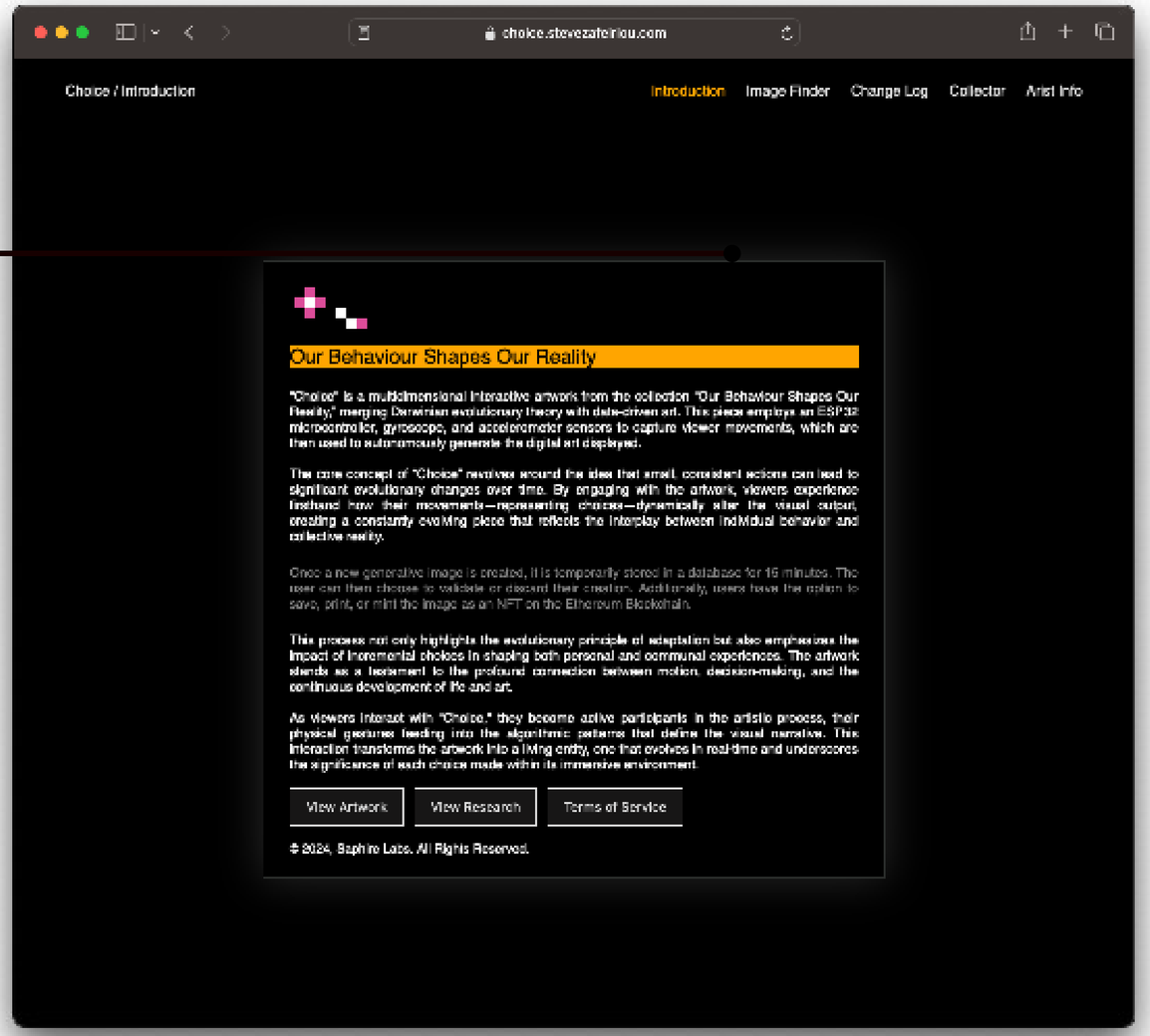
Choice Extention, Image Finder & “Collector” profiles.

An interface that allows users to remotely configure, monitor, and control the sculpture’s settings



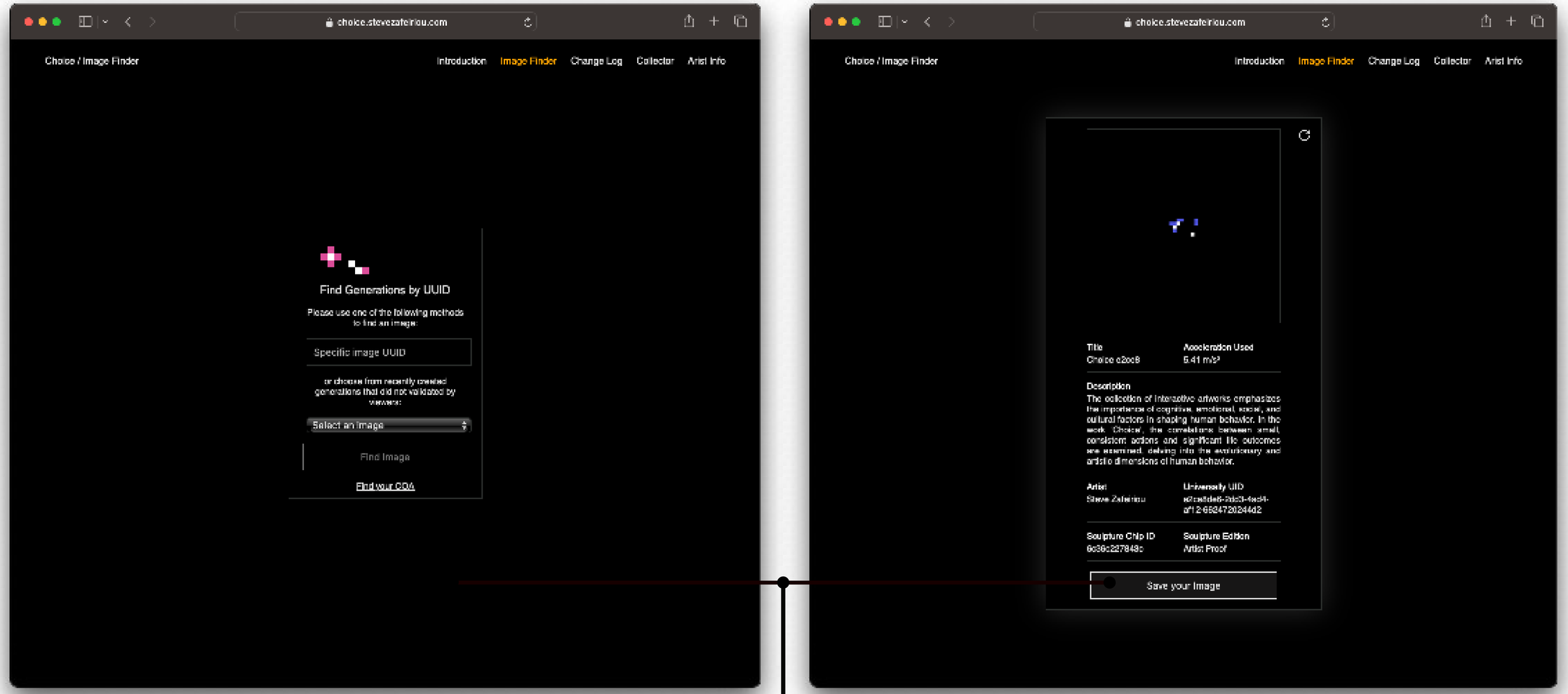
006

Landing page of Extentions' user interface (UI).

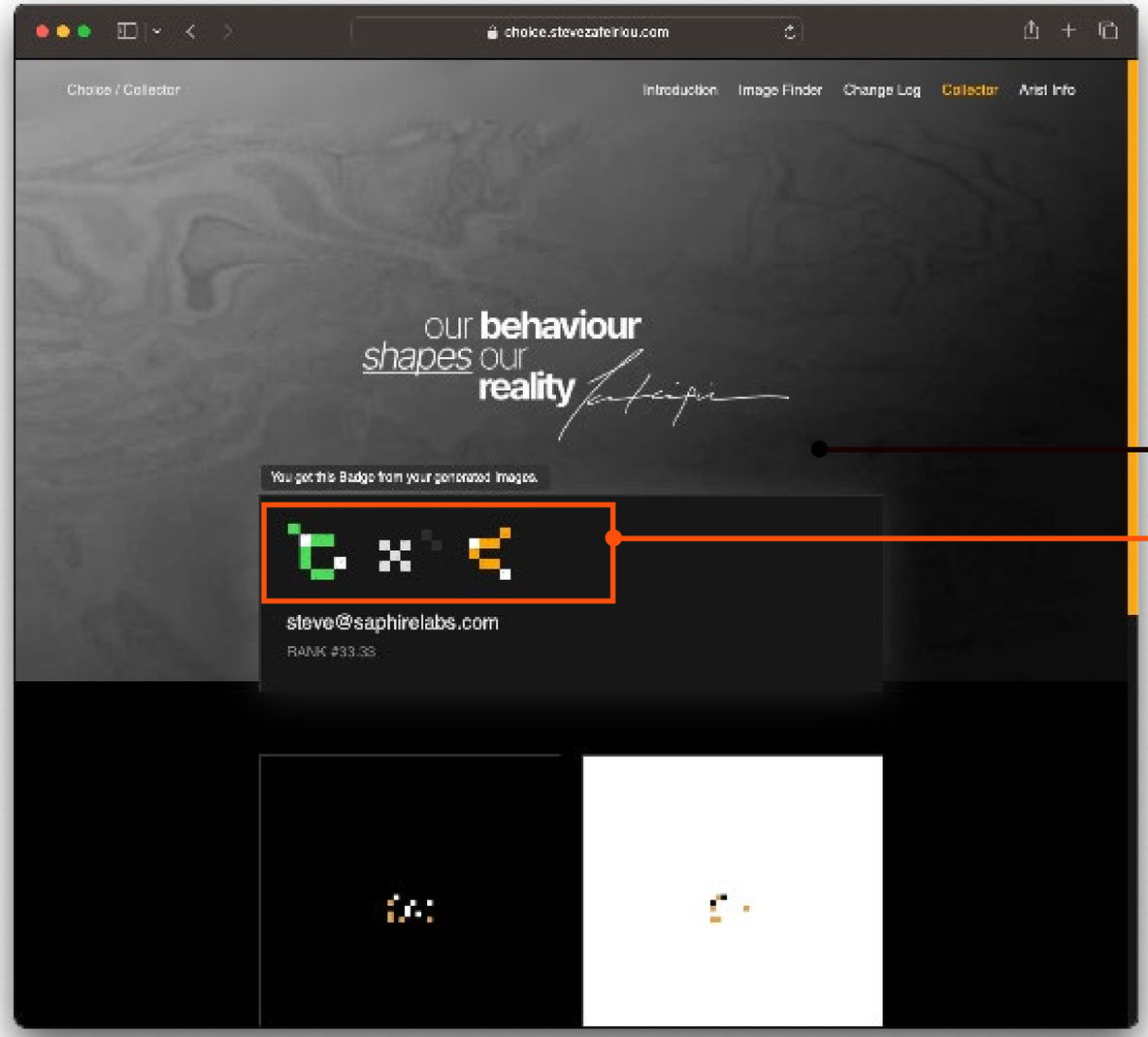


Choice Web App

007



Choice Extetion “Image Finder”

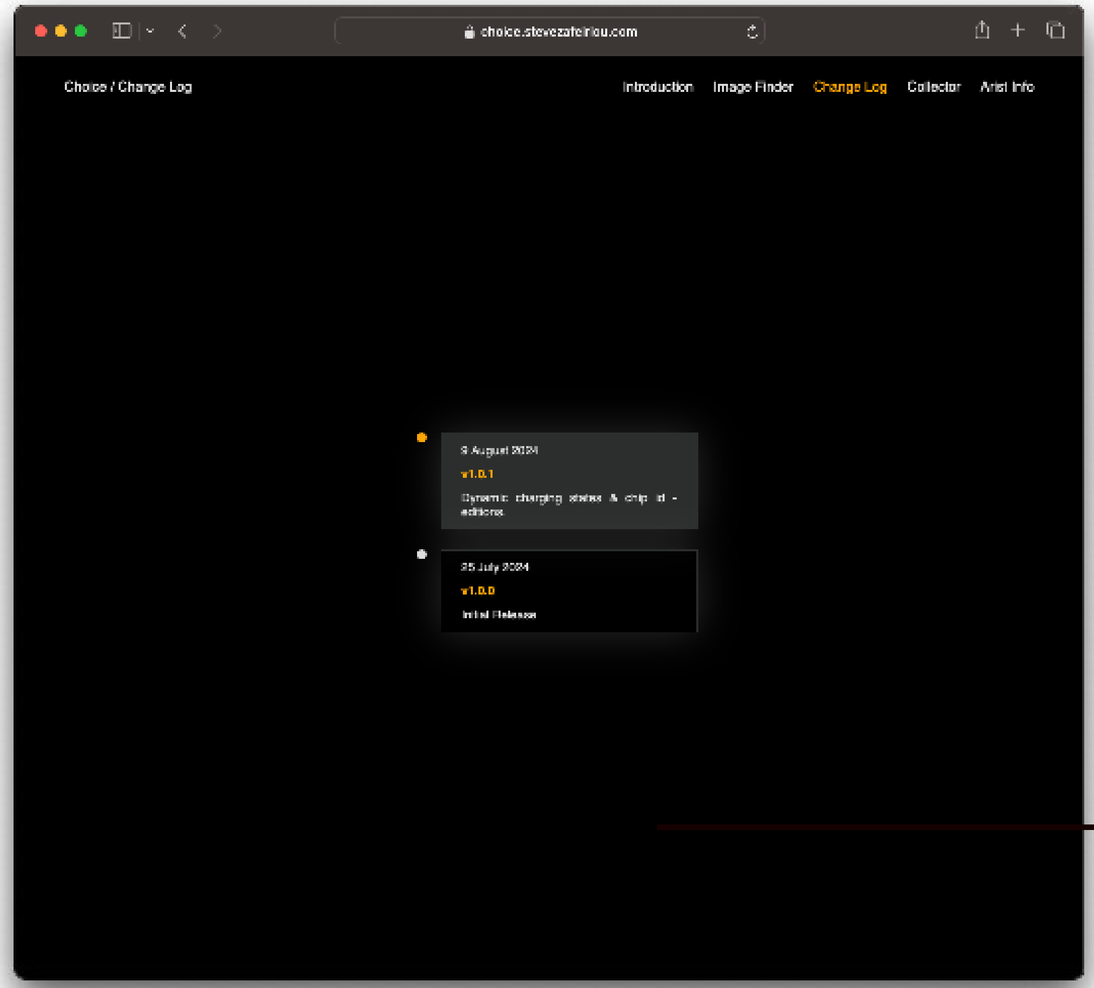


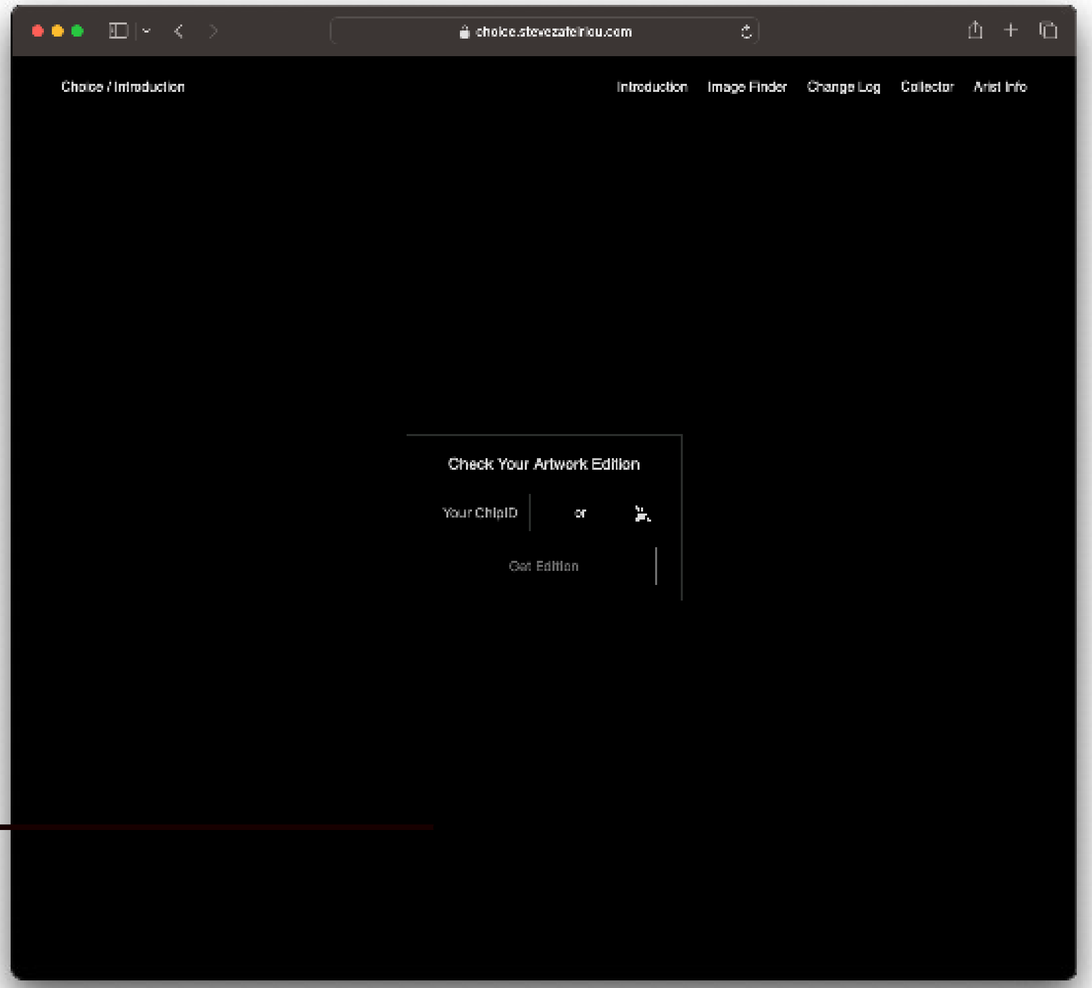
Collector Profiles with badges.

Owning a physical sculpture unlocks a badge, donattions to the project unlocks a badge, other community actions unlocks a badge etc. Interactive games or IRL events may included here.

Choice Web App

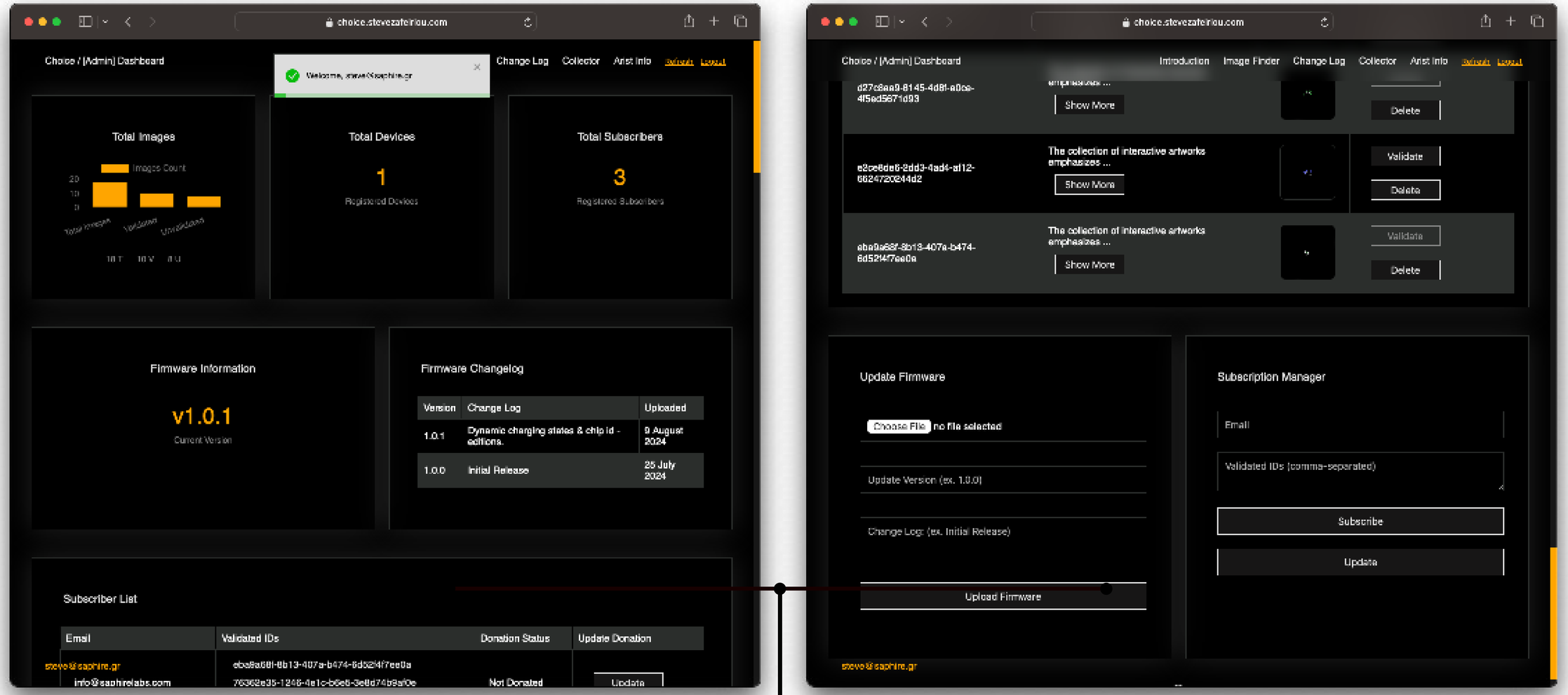
009





Firmware Updates Changelog & Certificates of Authenticity (scan to validate)

010



Admin Dashboard includes Analytics, Firmware OTA Update and other Management functions.

011

The Artistic Research behind Choice & Choice Extention.

Incorporating Data-Driven Art and Darwinian Theory: Exploring Evolutionary Principles in Algorithmic Creativity

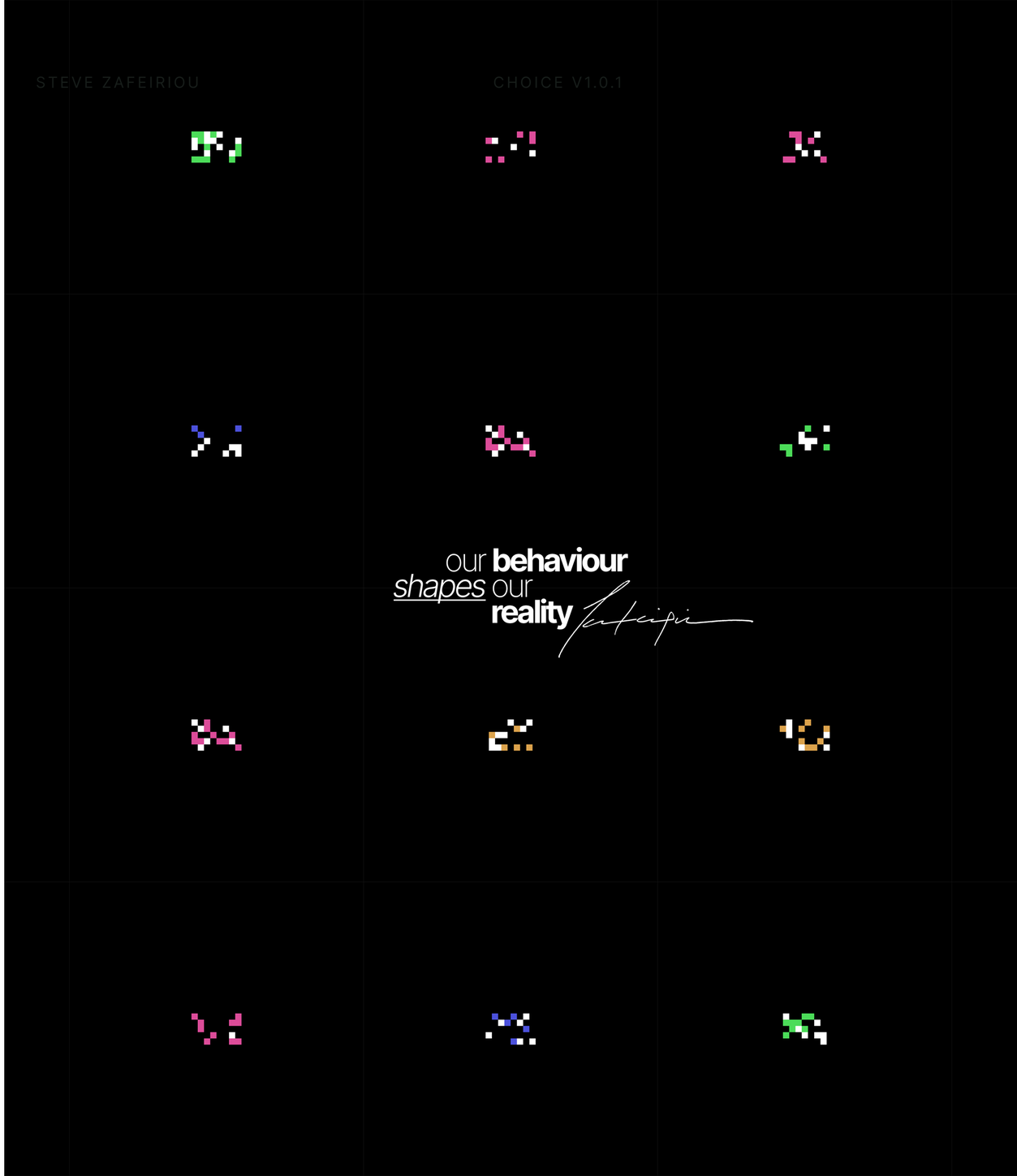
READ FULL RESEARCH AT
STEVEZAFEIRIOU.COM/ESSAYS

012

Human behavior and perception are essential to understanding reality, with dynamic interactions between actions and perceptions shaping our subjective experiences and social constructs. “Choice” uses behavioral data to algorithmically generate art in real-time. By connecting this work to Charles Darwin’s evolutionary theories, we gain insights into how gradual human actions lead to significant outcomes and artistic expression. The conceptual framework explores the complex relationship between behavior and perception, enhancing our understanding of individual and collective realities.

“Choice” reflects an artistic / technological framework for understanding how behavior and perception shape individual and collective reality. The work combines Darwinian evolutionary theories with generative art. The work emphasizes the importance of small, consistent steps for achieving significant results, both in life and art. This approach enriches our understanding of human behavior. The selected vocabulary provides a framework for exploring these themes, highlighting the complex interplay between individual actions and collective experiences.

Artistic Context



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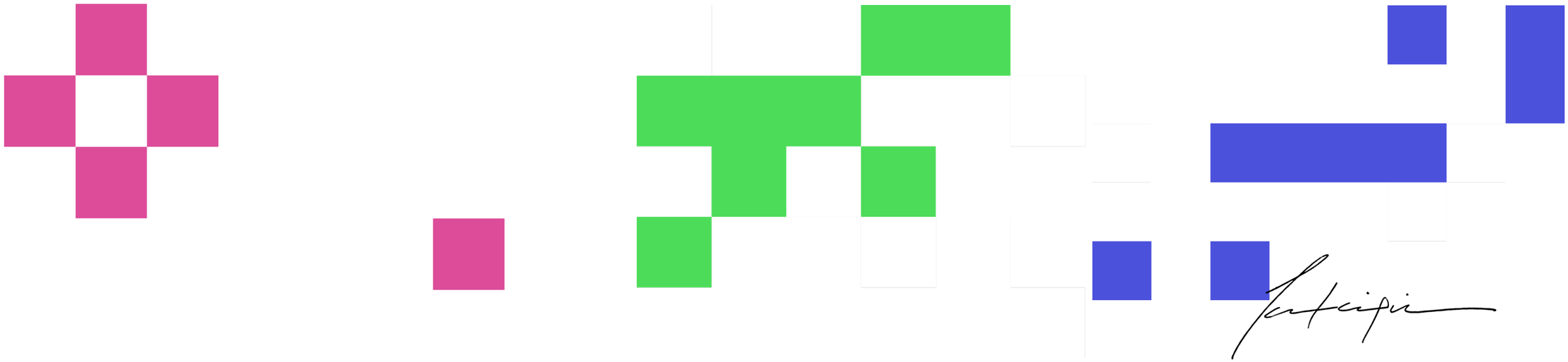

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The Technology

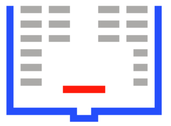
[CHOICE] Creating an open-source Ecosystem of applications

The intersection of art and technology in Choice is realized through an open-source, data-driven framework that ensures sustainability and fosters a creative community.

The technological framework that powers the artwork, highlighting the open-source nature of the project and its potential to foster a community of future creators. The sustainability and longevity of Choice are rooted in the transparency and accessibility of its codebase, ensuring that others can build upon and contribute to this creative infrastructure.

The firmware is the backbone of Choice, managing the operations between various hardware components. Central to this is WiFiManager.cpp, which handles the WiFi connectivity of the sculpture. The WiFi Manager is responsible for connecting the sculpture to the internet by setting up an access point that allows users to configure the WiFi settings. This connectivity enables Over-the-Air (OTA) updates, ensuring that the sculpture's software can be updated without the need for physical intervention. The firmware is structured into several key modules, such as Display.cpp, Sensor.cpp, and Utils.cpp, each responsible for different operations. For example, Display.cpp handles the control and management of the display, ensuring that the visual output is both accurate and responsive.

Firmware Architecture



VIEW FULL THE SOFTWARE AT:
GITHUB.COM/SAPHIRELABS

016

Real-Time Data Processing

```
switch (movementState) {
    case WAITING_FOR_UP:
        if (accelY > threshold) {
            movementState = WAITING_FOR_DOWN;
            lastMoveTime = currentTime;
            //Serial.println("Detected UP movement");
        }
        break;
    case WAITING_FOR_DOWN:
        if (accelY < -threshold && (currentTime - lastMoveTime)
            displayAcceleration(accelY); // Display acceleration
            delay(1000); // Allow time to view the acceleration
            generatePixelArtWithAnimation(accelY);
            movementState = WAITING_FOR_UP;
            lastMoveTime = currentTime;
        } else if ((currentTime - lastMoveTime) >= moveWindow) {
            movementState = WAITING_FOR_UP;
        }
        break;
}
```

At the core of Choice's generative art is the real-time processing of data from an MPU6050 accelerometer. This sensor continuously monitors the sculpture's movements, specifically tracking acceleration along the Y-axis. When significant motion is detected, the firmware captures this data and translates it into dynamic visual patterns displayed on the TFT screen. This process is what brings the artwork to life, making each interaction unique.

The real-time data processing not only ensures that the artwork is responsive but also that it evolves organically with every interaction.

The display system in Choice is designed to be interactive, responding to user inputs via physical buttons. The firmware's main loop monitors these inputs and updates the display accordingly. For instance, pressing the left button can toggle the device between active and deep sleep modes, conserving energy when the sculpture is not in use. Additionally, the right button allows users to invert the display colors, adding another layer of personalization to the artwork.

```
const int columns = 8; // Number of columns
const int rows = 5; // Number of rows

int cellWidth = tft.width() / columns;
int cellHeight = tft.height() / rows;
```

Interactive Display and User Input

Open-Source Commitment and Community Building

Choice is built on the principles of transparency and collaboration. The entire software stack is open-source, meaning that all the code is freely available for anyone to view, modify, and enhance. This open-source approach is critical for sustainability, as it ensures that the software can be maintained and improved by the community over time. Moreover, by sharing the codebase, Choice invites other creators to build upon this foundation, fostering an ecosystem of innovation and creativity.

```
MIT License

Copyright (c) 2024 Stefanos Zafeiriou
```

By choosing an open-source model, Choice not only secures its own longevity but also contributes to a broader movement of open innovation, **where the tools and knowledge** required to create are shared freely within the community.

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Thank you.

From Steve Zafeiriou, thank you for your attention to detail and your support.

If you need any help or have any questions, especially when reviewing this document, please do not hesitate to reach out to by email, phone, social profiles, or website.

www.stevezafeiriou.com