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PROJECT PROPOSAL

2023 - 2024

Stelman-Ai Generative Art Project

1. Conceptualization and planning

THE IDEA

Transforming Fragmented Realities into an immersive VR experience where users can explore infinitely personalized worlds. Handpick your favorite fragment and let the application craft an endless new landscape. Immerse yourself in the boundless realms of imagination with the Stelman-Ai Generative Art Project.

PROJECT GOALS

The Stelman-Ai Generative Art Project aims to create an extraordinary and infinitely customizable VR experience that bridges the gap between art, music, and technology

OBJECTIVES

1. To create an immersive VR platform for exploring Stelman's generative art.
2. To provide an educational tool for users to discover the art and music of Stelman.
3. To engage users with interactive elements that enhance their understanding of the artist's work.
4. To offer a unique and dynamic experience through algorithm-driven art and music pairings.

PROJECT GOALS

- MUSIC INTEGRATION : classical music to experience the painters’ creative experience.
- GENERATIVE ART: engine that crafts ever-evolving landscapes
- VR EXPLORATION
- USER EMPOWERMENT: Empower users to handpick their favorite landscape fragments and witness the application's creativity in shaping endless new worlds
- INFINITE CREATIVITY

KEY COMPONENTS

- MUSIC SELECTION: curate a diverse music library well integrated with the VR environment
- GENERATIVE ART ENGINE
- IMMERSIVE VR ENVIRONMENT with Unreal Engine
- USER INTERACTION INTERFACE must be intuitive to allow mood control and fragment selection

DISCLAIMER

THINGS ALWAYS EVOLVE: WE CANNOT IMAGINE HOW THINGS ARE GOING TO UNFOLD IN THE FUTURE, WHAT DEVELOPMENTS WILL NEW AI APPLICATIONS BRING TO THE GAME.

FEASIBILITY STUDY

The feasibility study evaluates the viability and potential success of developing a Virtual Reality (VR) application focused on art exploration, music discovery, and educational experiences centered around the works of Stelman.

MARKET TRENDS

- Increasing interest in generative art and its fusion with technology.
- Growing demand for immersive VR experiences.
- Rise in AI-driven applications in the art and music sectors.
- The need for interactive educational platforms.

COMPETITIVE LANDSCAPE

- Limited direct competitors with similar VR art and music exploration concepts.
- Potential indirect competition from VR art galleries and educational apps.
- Opportunity to establish a unique position in the market.

TECHNICAL REQUIREMENTS

- VR Hardware
- Compatible VR headsets (e.g., Oculus Rift, HTC Vive, Oculus Quest).
- High-performance computers or VR-ready devices.
- Software
- VR development platform (e.g., Unity or Unreal Engine).
- Algorithms for generative art and music pairings.
- User authentication and data storage system.
- 3D modeling software (e.g., Blender).
- Audio processing tools.

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FINANCIAL CONSIDERATIONS

- Licensing fees for software and 3D models.
- MarKeting and promotion expenses.

REVENUE STREAMS

- One-time purchase fee for the VR application.
- Subscription-based premium content for exclusive art and music experiences.
- In-app purchases for additional features or content.
- Partnerships with educational institutions for licensing.

POTENTIAL RISKS

- Technical Challenges: VR development can be complex, with potential issues related to compatibility, optimization, and user experience.
- Competition: Emerging VR applications and educational tools could pose a threat.
- User Adoption: Success relies on user engagement and adoption, which can be unpredictable.
- Content Quality: Ensuring high-quality generative art and music is crucial for user satisfaction.

TOOLS

- IMAGE REFINEMENT - GIMP
- IMAGE LABELING - CVAT
- POPULATING THE DATABASE with MIDJOURNEY

Vr Development: UNREAL ENGINE

Audio: FMOD

PYTHON

TOOLS

- imgaug to extend the data images
- NumPy to organize the dataset
- TensorFlow to create a ML model based on the dataset
- TensorBoard to visualize the ML training
- DVC to track ML models and data sets

Vr Development: BLENDER

UNREAL ENGINE

Audio: FMOD

PYTHON

SHORT BRIEF

Project Overview

MACHINE LEARNING ITER

- **PRE-PROCESSING :** prepare the dataset.
- **INPAINT**: inpaint the image fragments to expand
- **POST-PROCESSING**: edit or redefine the inpainted image
- **VALIDATION**: check the coherence and quality.
- **REPEAT**: this process for difference images in the dataset

TODAY

Agenda

Project Scope and Objectives

Literature Review on VR Art Exploration

Research Plan (timelines and milestones)

Tools Exploration

VR Environment Design and Modeling

Unity Deelopment

Generative Art Integration

Testing and Debugging

UI/UX Design

TOMORROW

Agenda

MONTH 1: Project initiation and planning
MONTH 2: Mood detection and early music integration
MONTH 3: Generative Art devlopment
MONTH 4: VR environment design and ui interface
MONTH 5: Integration, testing and deployment

Target audience

Creative Individuals

who seek inspiration from new and interactive artistic experience.

Art Enthusiasts and Collectors

interested in exploring innovative and dynamic artistic experiences

Virtual Reality Enthusiasts

People who already own VR headsets or have access to VR platforms

Tech-Savvy Audiences

- Technology enthusiasts who appreciate the technical complexities and innovation behind the project.
- Those who enjoy exploring cutting-edge applications that push the boundaries of art and technology.

Music Lovers

- have a passion for music and are interested in the synergy between art and music in an immersive context.
- People who enjoy discovering new music that complements their mood.

Virtual Reality Enthusiasts

Academic institutions, art schools, and technology education programs that can benefit from using the project as an educational tool.

GENERATIVE ART HISTORY

The history of generative art is a fascinating journey that spans over half a century, marked by the intersection of art, mathematics, and technology.

1. **Early Experimentation** (1950s - 1960s):
   - The roots of generative art can be traced back to the mid-20th century when artists began experimenting with early computer technologies and analog machines.
   - Artist John Whitney, often considered a pioneer in the field, used analog computers to create algorithmic art, primarily exploring the relationship between geometric shapes and motion.
2. **Algorithms and Plotter Art** (1960s - 1970s):
   - The 1960s and 1970s saw the emergence of artists like Vera Molnar and Manfred Mohr, who utilized algorithmic processes to create art.
   - Mohr, for example, developed a mathematical system to generate geometric shapes and patterns, which were then plotted by a computer-controlled device called a plotter.

GENERATIVE ART HISTORY

3. **Sol LeWitt and Conceptual Art** (1960s - 1970s):
   - Sol LeWitt, a prominent figure in conceptual art, introduced the idea of creating art based on sets of instructions or rules.
   - LeWitt's "Wall Drawings" series involved providing written instructions to other artists, who then executed the work, blurring the line between artist and executor.
4. **Early Computer Art** (1970s - 1980s):
   - The development of digital computers led to further exploration of generative art. Artists like Frieder Nake and Georg Nees programmed early computers to generate visual artworks.
   - These artists often used basic algorithms, such as recursive procedures, to create intricate patterns and shapes.
5. **Aesthetic Evolution (1980s - 1990s):**
   - In the 1980s and 1990s, generative art began to evolve aesthetically. Artists like Harold Cohen developed software (AARON) that could create intricate and visually appealing paintings.
   - Cohen's work highlighted the potential for generative systems to produce art with a unique aesthetic sense.

GENERATIVE ART HISTORY

6. **Interactive and Digital Art** (Late 20th Century):
    - Generative art became increasingly interactive with artists like Golan Levin and Casey Reas creating installations that responded to user input or the environment.
    - The development of software like Processing, designed for artists and creative coders, facilitated the growth of interactive generative art.
7. **Emergence of NFTs and Digital Collectibles** (2010s - Present):
    - In the 2010s, generative art gained new prominence with the rise of blockchain technology and NFTs (Non-Fungible Tokens).
    - Artists like Beeple and CryptoPunks gained international attention for their generative digital art, selling pieces as NFTs in online marketplaces.
8. **Contemporary and Future Trends** (Present - Future):
    - Today, generative art continues to evolve, incorporating advanced machine learning techniques, AI-driven creativity, and the potential for immersive experiences in virtual reality.
    - The field is expected to push the boundaries of what is possible in art, challenging traditional notions of authorship and creativity.

VR HISTORY

1. **Early Conceptualization** (1950s-1960s): The concept of virtual reality emerged in the 1950s and 1960s as a result of the work of various scientists and inventors. Notable figures in this early period include Morton Heilig, who created the Sensorama machine, an immersive theater experience, and Ivan Sutherland, who developed the first head-mounted display (HMD) called the "Sword of Damocles."
2. **The Birth of Computer-Generated VR** (1970s-1980s): The 1970s and 1980s saw the birth of computer-generated virtual reality. Myron Krueger developed the concept of "artificial reality" and created interactive, computer-generated environments that responded to users' actions. NASA also played a significant role in VR development during this time, using it for flight simulations.
3. **Commercialization** Attempts (1980s-1990s): The 1980s and 1990s saw early attempts to commercialize VR technology. Companies like VPL Research, founded by Jaron Lanier, introduced VR headsets and gloves. However, these systems were costly and primarily used for industrial and military applications.
4. **Virtual Reality in Entertainment** (1990s-2000s): Virtual reality arcades, like Virtuality, popped up in various locations, allowing people to experience rudimentary VR games. However, the technology was not yet advanced enough for widespread consumer adoption.
5. **The Rise of Consumer VR** (2010s-Present): The modern era of VR began in the early 2010s with the development of more affordable and accessible consumer VR devices. Oculus, founded by Palmer Luckey and later acquired by Facebook (now Meta Platforms, Inc.), released the Oculus Rift in 2016. This marked a significant turning point, as it offered a high-quality VR experience for consumers. Other companies, like HTC with the Vive and Sony with PlayStation VR, also entered the market.

VR HISTORY

6. **Expansion of VR Applications** (2010s-Present): VR technology found applications beyond gaming and entertainment. It is now used in fields such as healthcare (for medical training and therapy), education (for immersive learning experiences), architecture and design (for virtual walkthroughs), and more. It has also seen adoption in social VR platforms where users can interact with others in virtual spaces.
7. **Augmented Reality (AR) and Mixed Reality (MR):** Alongside VR, AR and MR technologies have emerged. AR overlays digital information on the real world, as seen in apps like Pokémon GO. MR combines elements of both VR and AR, allowing users to interact with both digital and physical environments.
8. **Future Prospects**: VR technology continues to advance rapidly. Current VR systems offer higher resolutions, better tracking, and more realistic experiences. The metaverse concept, which envisions interconnected virtual worlds and social spaces, has gained traction. Additionally, companies are working on standalone VR headsets that don't require a PC or console, further increasing accessibility.

The history of VR is a testament to human ingenuity and the persistent pursuit of immersive digital experiences. As technology continues to evolve, VR is expected to play an increasingly significant role in various aspects of our lives, from entertainment and education to work and social interaction.

AI APPLIED TO ART

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STELMAN'S HISTORY

Stelman, born Stelio Manneschi in Talla (Arezzo) in 1927, possessed an innate passion for painting from a young age, closely tied to the absence of his mother, the artist Lina. He attended the "Francesco Redi" Scientific High School in Arezzo, where his teacher Professor Salani shared his political views inspired by Piero Calamandrei. Stelman went on to study Political Science at the University of Florence, graduating with a dissertation on World War I. In 1955, he married Paola Giulia Giovampaoli, who shared his love for literature and art. Stelman's artistic journey began with evocative night scenes of Arezzo, imbued with a symbolist touch. He later ventured into abstract art in the 1960s, experimenting with vibrant colors. However, it was in the early 1970s that he forged his unique style, meticulously assembling clippings from newspapers and magazines to craft his visionary landscapes. These works carried a message against media saturation, expressed through vivid color usage. Stelman painted exclusively to classical music, and from the early 1970s to 1994, he dedicated his life entirely to art, continuously refining his style through research and exploration. His exhibitions garnered interest among critics due to his innovative language, encompassing influences from Surrealism, Picasso, Pop Art, and contemporary artists like Rosenquist and Rauschenberg. Stelman's distinctive contribution was the creation of a new "cosmogony," allowing viewers to interpret his art based on personal feelings. He is regarded as a powerful representative of Italian Fragmentism in pictorial language. Unfortunately, his later years were marked by a debilitating illness that affected his vision, ultimately leading to his passing in Arezzo in 1998. His legacy endures through exhibitions and the Association dedicated to preserving and promoting his work.

STELMAN through the lenses of Giorgio Di Genova

Through the insightful perspective of Giorgio Di Genova in 1988, Stelman's artistic vision emerges as a profound departure from the conventional. Stelman's perception of the world as a living, magmatic, and tumultuous organism reveals a profound connection to the cosmic energies at play. Rather than replicating the mundane reality of everyday life, Stelman's art embodies an intense imaginative force that possesses the autonomy to reshape the very cycle of cosmogony, from primordial chaos to the imminent birth of a new world. It is within this realm of boundless imagination that Stelman's art finds its wellspring, drawing upon the essence of visionary and lyrically dreamlike landscapes. In this artistic odyssey, Stelman navigates the uncharted territories of human imagination, redefining the boundaries of creativity and leaving an indelible mark on the tapestry of art history.

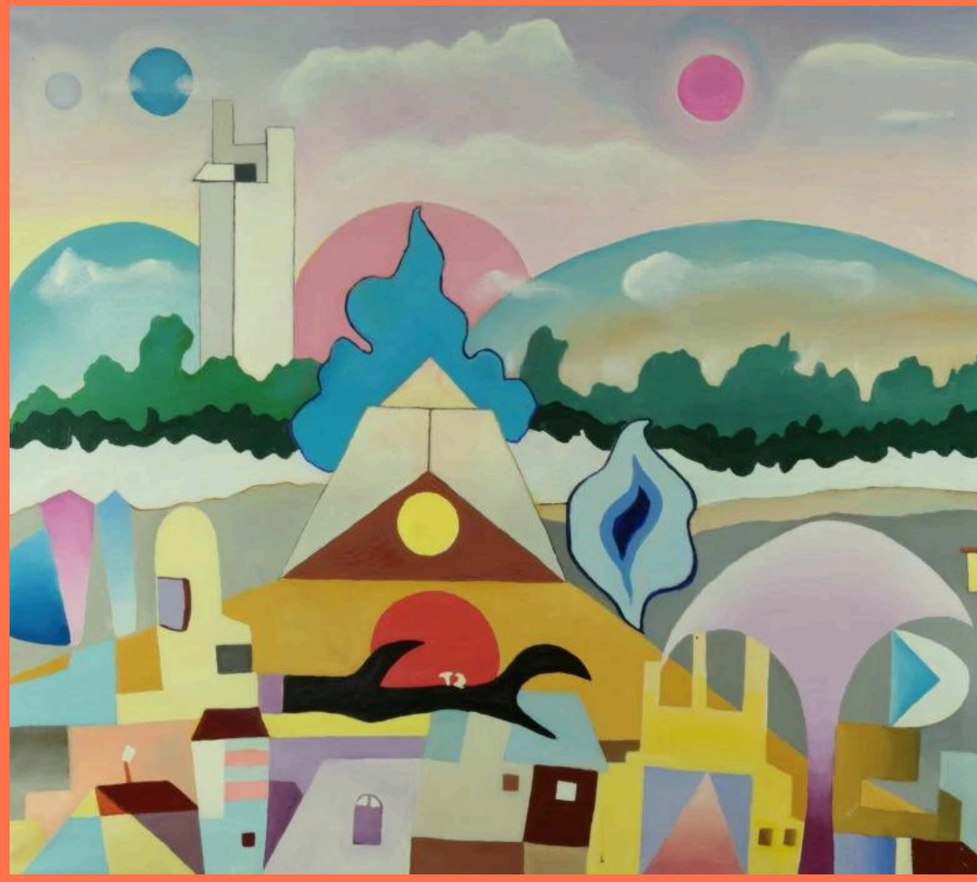
The art critic Giorgio Di Genova defines Stelman as en exponent of the 20th century fragmentation of language.

ASSOCIATION'S MISSION

The main mission of the association is to make Stelman known and to value his art and the power the artist had to create immersive worlds before the digital era.

Many events have been organized after the painter's departure:

- In 2018 the exposition 'Omaggio a Stelman' in Cortona (city of culture) inside Palazzo Casali.
- 2018 Mostra internazionale della Calabria Citra where three paintings with their corresponding sketches were exposed: "Inuit" "Il sogno di Eros" e "L'albero della vita".
- 2019 "Percorsi d'arte in Italia" exposition of "Il sogno di Eros".
- 2019 46th Premio Sulmona mentions Stelman's memory with its "Soli simboli".
- 2020 Publishing the Stelman book with the paintings' list and a complete commentary of the art critic Giorgio Di Genova.
- 2021 "Il sogno umano", Stelman's analogic exhibition in Mantova.



WHY A VR APPLICATION

It is an **Immersive Experience** since the VR offers a level of immersion that is unmatched by traditional even 3D applications. It can transport users to entirely different worlds, providing experiences that are engaging and memorable. This can be used for entertainment, education, and training.

Music and Art Fusion: One unique aspect could be the fusion of music and art. Users might explore how Stelman's art has influenced his music, and vice versa. For example, a particular painting might be linked to a musical composition, allowing users to experience both simultaneously.

Accessibility: VR technology can make music education and art appreciation accessible to a broader audience.

Multisensory Experience: VR engages multiple senses, including sight and sound. This multisensory approach can help users better understand and remember musical concepts and artistic details.

Inspiration and Creativity: Immersion in Stelman's art and music can be a powerful source of inspiration for budding musicians and artists. Users may be encouraged to create their compositions or artworks inspired by what they've learned.

SIMILAR VR APPLICATIONS

- **MUSEUMOR** growing art collection
- **MasterpieceVR** enables users to create 3D sculptures and paintings in VR. It offers a collaborative environment for artists and learners to work together on creative projects.
- The **Louvre VR Experience**: The Louvre Museum in Paris offers a VR experience that allows users to explore some of its most famous artworks, including the Mona Lisa and the Venus de Milo, in a virtual gallery setting. Users can get up close to the art and learn about its history and significance
- British Museum: Virtual Reality Tour: The British Museum offers a VR tour that takes users on a journey through its vast collection of art and historical artifacts. Users can visit different sections of the museum and interact with the objects.
- **Smithsonian Open Access VR**: The Smithsonian Institution provides a VR experience that allows users to explore a selection of objects from its various museums, including the National Museum of Natural History and the National Air and Space Museum.
- **Google Arts & Culture VR**: Google Arts & Culture offers a VR app that features artworks and historical artifacts from museums around the world. Users can take virtual tours of famous museums and explore high-resolution images of art pieces.
- **VR Museum Tours**: Several VR applications, such as Wander and vMuseum, offer museum tours that allow users to virtually visit different museums and galleries. These apps often include 360-degree photos or videos of museum interiors and artworks.

STEPS TO ACHIEVE MY APPLICATION

- PAINTING DATABASE to extend with generative art through Midjourney.
- CONTENT CREATION: Blender to develop 3d paintings
- VIRTUAL REALITY DEVELOPMENT: Unreal Engine. Implement with **interactive elements** to allow user engagement.
- USER INTERFACE DESIGN -> design VR menus to navigate in the different sections of the VR Application. VISUAL DESIGN.
- TESTING AND FEEDBACK -> QUALITY (fix bugs, glitches and performance issues). USER TESTING (gather **feedback** on usaility).
- OPTIMIZATION -> ensure that the application runs smoothly on various VR headsets and platforms.
- DISTRIBUTION -> publish my application on relevant VR platforms (Oculus Store, SteamVR and web-based VR platforms), PROMOTION (social media and collaboration with educational institutions).
- FEEDBACK AND ITERATION -> collect user feedback after the launch to improve the app.
- MAINTENANCE -> TECHNICAL SUPPORT, UPDATE (to keep the app engaging), MONETIZATION (one time purchase?)
- LEGAL CONSIDERATIONS (on classical music as well as Stelman's Art).
- DOCUMENTATION explaining how the app works (UX path).

STEPS TO ACHIEVE MY APPLICATION

1. GATHER IMAGES TO BUILD THE DATASET -> maintain a well defined directory structure + structure documentation
2. GATHER A MUSIC DATASET
3. Divide the paintings into fragments
4. Assign a label to each painting’s fragment
5. Organize into hierarchies
6. IMAGE REFINEMENT - GIMP
7. IMAGE LABELING - CVAT
8. Create a training set and a test set
9. Model training
10. Model evaluation
11. Iteration and improvement

USER JOURNEY

1. **INTRODUCTION PAGE** -> where users are introduced to the VR experience, likely with a captivating image of Stelman's art. They have the option to create an account or log in.
2. **REPLY TO QUESTIONS** -> Users answer questions, which influence the generative art algorithm's choices. The algorithm presents the user with the most fit painting according to their mood.
3. **PERSONALIZED PAINTING** -> Users can explore the artwork and its associated Stelman's song track.
4. **360 DEGREE NAVIGATION**: Allowing users to navigate the artwork in 360 degrees is an immersive feature. It provides users with a sense of presence within the artwork, enhancing the VR experience.
5. **FRAGMENT CHOICE**: Giving users the option to choose fragments to continue their path is an excellent way to add interactivity. It allows users to explore the artwork more deeply and engage with it on their terms.
6. **EXPLORE MUSIC**: This feature adds a multi-sensory dimension to the experience. Users can explore the music that inspired the painting, creating a connection between visual and auditory art.
7. **SHUFFLE BUTTON**: Including a shuffle button adds an element of randomness and unpredictability. It encourages users to explore more artworks and keeps the experience fresh.

POSSIBLE INTERACTIVE ELEMENTS

1. **Teleportation**: Users can select a fragment and "teleport" to that spot within the virtual world, making navigation more intuitive.

2. **Menu Systems**: Interactive menus or user interfaces that allow users to access settings, options, or information within the VR experience.

4. **Gaze-based Interaction**: Actions are triggered based on where the user is looking. For example, staring at an object for a few seconds might trigger an action.

5. **Physics-based Interaction**s: Virtual objects behave realistically, allowing users to push, pull, or throw them around as if they were in the real world.

6. **Spatial Audi**o: Sound sources are positioned in 3D space, creating a more immersive auditory experience.

7. **Environmental Effects**: The virtual environment can respond to user actions, such as changes in weather, time of day, or environmental simulations (e.g., fire, water).

8. **Choices**: Users can select the fragment allowing the generation of a new painting.

9. **Feedback Systems**: Users receive feedback on their actions, such as visual cues, vibrations, or audio responses, to confirm interactions.

FINAL OUTPUTS TO ACHIEVE

VIDEO OF THE IMMERSIVE EXPERIENCE

VISUALIZING THE USER PATH BY WEARING THE VR MACHINE

UX FRIENDLY downloadable APPLICATION

TO DEVELOP

1. VR INTERFACE
2. USER EXPERIENCE
3. BACKEND TO HANDLE DATA (music)
4. MUSIC DATABASE, PAINTINGS DATABASE
5. ALGORITHM TO EXPAND THE FRAGMENTS

EXPECTED OUTCOMES

The Stelman-Ai Generative Art Project envisions delivering a unique, user-centric VR experience that blurs the lines between art, music, and technology. Users will embark on an immersive journey of endless creativity, where the application crafts personalized worlds in real-time, inspired by their emotions and preferences.

CONCLUSION

This project aims to redefine the boundaries of artistic expression in the VR space, offering users the opportunity to embark on a dynamic, infinitely creative adventure that reflects their inner worlds. The Stelman-Ai Generative Art Project promises to immerse users in a realm of boundless imagination, where fragmented realities transform into personalized masterpieces.

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