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Generating Virtual Landscapes and Environmental Narratives with StyleGAN2

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Abstract. This paper presents an AI-driven approach to landscape representation and environmental commentary through a video artwork focused on the Gardens of Stone, a natural area threatened by industrial activities. Using StyleGAN2-ADA and a carefully curated dataset of images, the project generates a video that simulates a continuous exploration of the park's diverse terrain. Beyond visually capturing the park's natural beauty, the artwork underscores its ecological fragility by highlighting environmental threats posed by nearby industrial encroachment. By integrating advanced AI techniques with ecological advocacy, this project offers a unique contribution to digital arts and broadens the discourse on the role of technology in raising environmental awareness, showcasing AI's potential to create engaging, advocacy-driven artistic expressions.

Keywords: StyleGAN2 · landscape generation · continuous landscape · AI-generated video.

1 Introduction

Nestled within a recognized World Heritage Area, the Gardens of Stone National Park in the Blue Mountains, Australia, is not only a geological marvel but also an ecological hotspot of global importance. Towering rock formations, sculpted by millions of years of erosion, form intricate canyons and valleys that support a diverse range of plant and animal life adapted to this rugged terrain. The area's unique sandstone formations are among the most spectacular in the world, providing critical habitat for numerous species and contributing to the park's exceptional biodiversity. These formations, both visually stunning and ecologically vital, underscore the area's ecological importance.

However, the park's proximity to extensive coal mining operations has placed its delicate ecosystem under considerable threat. Coal extraction and processing activities have led to land clearing, habitat fragmentation, and water pollution, endangering the park's biodiversity and threatening the integrity of its unique geological formations. Local environmental advocates and frequent explorers of this landscape, bear witness to these environmental pressures and have played a pivotal role in documenting and raising awareness about the need for conservation.

While traditional generative art projects and environmental visualizations have offered valuable tools for representing nature, these approaches often lack the realism, continuity, and detail necessary for environmental narratives. Many generative models focus on abstract or symbolic renderings, limiting their effectiveness in conveying ecological specificity or environmental degradation. Furthermore, models used for landscape generation frequently rely on large, generic datasets, which may capture generalized features but lack the ecological authenticity needed to represent specific environments. These limitations restrict the potential of generative art to serve as a medium for environmental advocacy, as audiences may find it challenging to connect with landscapes that lack realism or contextual detail.

To address these gaps, this project leverages StyleGAN2-ADA [9], a state-of-the-art generative model with adaptive augmentation capabilities, combined with a curated collection of images contributed by experienced bushwalkers. By applying this model to a carefully constructed dataset of the park, the project seeks to emulate the experience of traversing its expansive and intricate terrain, blending photorealistic rendering with ecological storytelling. The generated video serves as both an homage to the park’s beauty and a compelling reminder of its vulnerability in the face of industrial encroachment. This collaboration with local bushwalkers contributes not only to the technical quality of the generated landscapes but also to the project’s authenticity, ensuring that the AI-rendered landscapes are not only realistic but also deeply rooted in the park’s ecological context.

In the following sections, we present a detailed case study on using StyleGAN2-ADA to generate AI-driven landscape art, highlighting the technical methodologies employed and the environmental implications of the work. By situating this project at the intersection of AI, art, and environmental advocacy, we aim to advance the field of AI-generated art while also encouraging thoughtful reflection on the relationship between humanity and the natural world.

2 Related Work

The intersection of artificial intelligence (AI) and art has fostered a growing field of AI-generated art, where Generative Adversarial Networks (GANs) [5] have become central to exploring new creative possibilities. In landscape generation, GANs have been employed to produce realistic and diverse environments, representing both natural and imagined worlds. Projects like GANscapes [4] and TerrainGAN [6] showcase AI’s capacity to create vast, intricate landscapes; however, these projects are often limited by the lack of ecological specificity, as they rely on large, generalized datasets that lack the unique, site-specific characteristics of real-world locations. Tools such as GauGAN [13] allow users to interactively design landscapes from simple sketches, demonstrating GANs’ potential to generate artistically compelling environments but often focusing on abstracted or idealized imagery, which may reduce their impact in ecological storytelling.

The historical evolution of GANs in media art has seen significant advances, with models like StyleGAN2-ADA enabling high-resolution, detailed synthesis even from limited datasets. This project builds upon these advancements by using StyleGAN2-ADA to achieve a nuanced representation of specific landscapes, leveraging a carefully curated dataset collected over twelve years. Unlike previous works that typically use generic datasets, our approach introduces a personalized dataset capturing the specific ecological and geological qualities of a real location, making it uniquely suited for promoting environmental awareness and authenticity in visual storytelling.

A notable advancement in this field is the method by Skorokhodov et al. [16], which enables smooth transitions across unrelated images generated by StyleGAN2. By aligning latent and image spaces, their technique facilitates seamless interpolation between previously disconnected points, creating continuous sequences that resemble panoramic landscapes or unfolding narratives. Although their work demonstrates a powerful method for continuity in generated imagery, it does not focus on ecological or site-specific applications. Our project adapts their approach to simulate interconnected terrains within a single landscape, a core aspect of our methodology for capturing the continuity and flow within natural environments.

Several media artists have used AI to create artworks that engage with themes of nature and environmental advocacy. Refik Anadol utilizes data-driven approaches to create dynamic, immersive environments that depict natural landscapes through abstract, computationally generated forms [3]. Anadol’s work exemplifies how GANs can process and reinterpret vast datasets to create art that reflects the complexity of natural systems, yet the abstraction in these works often distances viewers from the specific ecological contexts. Similarly, Memo Akten has explored ecological themes, using AI to simulate environmental processes and the delicate balances within ecosystems [2]. While both Anadol and Akten offer valuable comparisons, as their approaches emphasize AI’s role in reshaping viewers’ perceptions of ecological interconnectedness, our project diverges by focusing on site-specific landscapes informed by actual ecological conditions, with the intent of promoting environmental preservation through realistic representation.

Quayola’s *Landscape Paintings* [14] reinterpret classical landscapes using machine learning, encouraging viewers to reconsider the relationship between technology, nature, and artistic representation. However, Quayola’s work focuses on historical re-imagination rather than ecological advocacy. In contrast, our project seeks to create not just a realistic depiction but also an abstracted ecological narrative that prompts reflection on the impact of human activities on natural landscapes. By incorporating subtle industrial sounds alongside the natural audio, our work introduces a tension between preservation and encroachment, a theme that is also present in contemporary eco-art practices.

This work draws upon theoretical frameworks in media theory, AI in art, and environmental art to situate AI-generated landscapes within a broader conceptual and historical context. Lev Manovich’s discussions on media theory and AI

art [12] provide a foundation for understanding how GANs transform traditional approaches to landscape art by creating generative systems that can simulate the dynamic qualities of nature. Neil Leach’s exploration of AI in architecture and landscape design [11] offers insights into how AI-generated landscapes can function as ecological statements, blending aesthetics with architectural and environmental concerns. Additionally, EcoArtists such as Newton and Helen Harrison have long used art as a medium to advocate for ecological preservation [7], a theme echoed in this project as it highlights the environmental fragility of the park.

By combining these influences, this project builds upon a lineage of artists and theorists who use technology to address environmental issues, aiming to foster a heightened awareness of the park’s ecological value through an AI-generated visual and auditory experience.

3 Methodology

This project leverages StyleGAN2-ADA [9], a powerful generative model known for producing high-resolution, photorealistic images, to synthesize a continuous visual narrative of a natural park landscape. Although originally developed for tasks like face generation, StyleGAN2-ADA’s ability to disentangle style and content makes it particularly well-suited for creating complex and varied natural scenes. The Adaptive Discriminator Augmentation (ADA) variant was crucial for this application, providing stability and high-quality outputs even with a limited dataset.

While StyleGAN3 [8] introduces architectural improvements that address spatial aliasing and enhance temporal consistency across frames, StyleGAN2-ADA was selected due to its robustness when trained on smaller, highly curated datasets. The ADA augmentation in StyleGAN2-ADA dynamically adjusts augmentation intensity, which reduces overfitting and improves diversity within the generated outputs—critical for training with the limited image dataset used in this project. Given the project’s focus on achieving artistic landscapes rather than strict spatial alignment across frames, StyleGAN2-ADA’s proven effectiveness with smaller datasets and complex textures made it the preferred choice over StyleGAN3.

3.1 Dataset Creation and Preprocessing

The dataset for this project was derived from an extensive collection of approximately 60,000 photographs taken by bushwalker and environmentalist Yuri Bolotin, who has documented the Gardens of Stone National Park in the Blue Mountains, Australia, over twelve years, from 2011 to 2023. Due to ownership and copyright restrictions, the dataset is not publicly available. Bolotin’s contribution to this project went beyond providing images; his insights into the park’s ecological diversity, unique geological features, flora, and the threats it faces from nearby mining activities enriched the understanding and direction of this

work. These perspectives allowed the AI-generated visuals to reflect not only the natural beauty of the park but also its ecological significance and fragility.

This collaboration yielded a dataset with significant ecological and aesthetic value. Each image depicts the scenic beauty of the park and preserves key environmental features across time. The photographs cover a wide range of terrains within the park, including rugged mesas, forested headwaters, and dramatic cliffs. These terrains represent distinct geological and botanical characteristics, with features such as erosion-sculpted cliffs and elevated plateaus captured across various seasons and lighting conditions. This breadth of coverage ensured that the StyleGAN2-ADA [9] model could learn the nuanced features unique to each ecological zone within the park. The selected images convey the park’s ecological richness and geological variety, aligning with the artistic goal of creating a visual narrative that highlights the interconnectedness of the natural elements.

The artistic intent guiding the dataset curation was to emphasize the park’s natural textures and ecological conditions, enabling the generated images to serve as a compelling visual exploration of its landscape diversity. To align the dataset with the project’s artistic and ecological goals, a curation process refined the original 60,000 images to a focused set of 12,000 images. The first step in this process involved using an object detection algorithm, specifically YOLO (You Only Look Once) [15], to filter out images containing human elements or artificial objects. This automated filtering ensured the dataset focused exclusively on natural landscapes, eliminating distractions and allowing the model to concentrate on patterns intrinsic to the park’s geological and ecological features.

Specific selections focused on geological diversity, representing unique rock formations and eroded structures that define the park’s character. Diverse ecological features, including vegetation types ranging from dense eucalyptus forests to riverine shrublands, were included to introduce botanical variation into the dataset. Seasonal and lighting changes were incorporated to capture subtle shifts in atmosphere and visual tone, adding a temporal dimension that enhances the visual quality of the generated landscapes. This curated approach was essential for producing a dataset that supports photorealistic image generation while capturing the park’s ecological integrity.

Specific selections focused on geological diversity to represent the unique rock formations and eroded structures that give the park its character. Additionally, diverse ecological features, including various vegetation types from dense eucalyptus forests to riverine shrublands, were included to introduce botanical variation into the dataset. By incorporating seasonal and lighting changes, the images reveal subtle shifts in atmosphere and visual tone, adding a temporal dimension that enhances the compelling and dynamic quality of the generated landscapes. This curated approach to data selection was essential for producing a dataset that not only supports photorealistic image generation but also captures the ecological integrity of the park.

Following the filtering process, the images were standardized to a resolution of 1024x1024 pixels, a size chosen to balance computational efficiency with visual detail, allowing for high-resolution output while keeping memory requirements

manageable during training. Normalization was applied to ensure consistent pixel intensity values across the dataset, enhancing model stability and helping the generator produce cohesive and artifact-free outputs. This comprehensive approach to data collection and preparation established a high-quality foundation for training StyleGAN2-ADA, enabling the model to synthesize landscapes that resonate both visually and conceptually with the unique features and ecological importance of the Gardens of Stone National Park. Through these processes, the dataset serves not only as technical input but as an artistic medium, enriching the generated images with an authentic representation of the park’s natural diversity.

3.2 Model Configuration and Training Process

The StyleGAN2-ADA model was configured with several architectural and hyperparameter adjustments to capture the fine-grained details and stylistic nuances of the landscape images in high resolution. The architecture comprises 18 convolutional layers arranged in a progressively growing structure, enabling the model to handle intricate textures and patterns inherent in natural landscapes, such as rock formations, dense foliage, and nuanced lighting effects on water. Leaky ReLU activation functions with a slope of 0.2 were utilized, a standard choice in StyleGAN2-ADA, allowing for effective gradient propagation and robust texture generation.

The learning rate was initialized at 0.0025 and dynamically adjusted throughout the training process based on output stability and diversity. During initial stages, the relatively high learning rate facilitated faster convergence on general landscape features. Over time, the learning rate decayed to 0.0001 to refine finer details without overshooting, improving fidelity and consistency across diverse landscapes.

Adaptive Discriminator Augmentation (ADA) was crucial in stabilizing training on the limited dataset of 12,000 images. ADA dynamically adjusted augmentation strength (e.g., rotation, translation, and color adjustments) based on discriminator performance, mitigating overfitting and maintaining output diversity. This approach enabled the model to generate varied and realistic landscapes that reflected the park’s ecological richness.

Training spanned approximately 100,000 iterations. Challenges like mode collapse, where the generator produces repetitive outputs, were addressed by applying learning rate decay and adjusting augmentation strength. When mode collapse occurred, the learning rate was incrementally reduced to encourage exploration of broader latent spaces. Temporary increases in augmentation strength helped the discriminator remain sensitive to subtle variations, maintaining a balance between generator and discriminator performance.

Further regularization techniques were applied to stabilize training and enhance image quality. R1 gradient penalty was used on the discriminator, penalizing large gradients and thus preventing the discriminator from providing overly aggressive feedback. This regularization approach contributed to higher quality

outputs by ensuring stable learning dynamics, allowing the generator to capture fine textures and depth without introducing artifacts.

Through these architectural configurations, adaptive learning strategies, and regularization techniques, StyleGAN2-ADA was optimized to produce high-resolution, photorealistic landscapes. The model captures the intricate details and atmospheric qualities of the Gardens of Stone National Park, aligning with the artistic goals of this project to create a visually engaging and ecologically representative narrative.

3.3 Latent Space Interpolation for Seamless Transitions

A key objective of this project was to generate a continuous video sequence that transitions smoothly between distinct landscape scenes, creating the impression of an uninterrupted journey through the Gardens of Stone. Inspired by Skorokhodov et al. [16], who used SA-AdaIN (Spatially-Aligned Adaptive Instance Normalization) to achieve seamless spatial transitions across disparate images, we adapted their approach to focus on maintaining continuity within a single landscape. Our method aims to achieve smooth, contextually consistent transitions that reflect the natural interconnectedness of the park’s ecosystems.

To implement these smooth transitions, we applied a combination of cubic smoothing and Gaussian interpolation within the latent space of StyleGAN2-ADA. Both methods were applied sequentially. Cubic smoothing was applied first to generate smooth trajectories between key latent vectors. Gaussian interpolation was then applied as a post-processing step to further refine the transitions by smoothing temporal variations across frames. This two-step approach ensures both high-level continuity in the latent space and pixel-level consistency, which are crucial for maintaining visual coherence across scenes. Specifically, the interpolation is performed by identifying key latent vectors corresponding to visually distinct scenes, and then generating intermediate frames by interpolating these vectors. The following interpolation techniques were applied:

1. **Cubic Smoothing for Latent Space Interpolation:** We utilized cubic smoothing to create a gradual change in landscape features, ensuring that the transition from one key scene to another flows naturally without sudden jumps in texture or color. Cubic smoothing is based on third-degree polynomials that adjust interpolation rates, reducing abrupt changes by smoothing the trajectory between two points in the latent space. Mathematically, cubic interpolation between two latent points L_1 and L_2 can be represented as:

$$L(t) = (2t^3 - 3t^2 + 1)L_1 + (t^3 - 2t^2 + t)(L_2 - L_1)$$

where t ranges from 0 to 1, controlling the transition rate. This approach ensures a smoother progression between scenes, effectively blending visual features such as texture and lighting gradients.

2. **Gaussian Interpolation for Texture Continuity:** To enhance textural consistency across frames, we applied Gaussian interpolation as a post-processing step. This method smooths transitions by gradually varying pixel

intensity values between consecutive latent vectors. Gaussian interpolation distributes transitions according to a Gaussian kernel, where values closer to the center of the transition are weighted more heavily, gradually decreasing towards the edges. This technique helps prevent artifacts by smoothing pixel-level variations that would otherwise appear disjointed during rapid scene changes. Mathematically, Gaussian smoothing is expressed as:

$$L'(x) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

where x represents the spatial or temporal dimension, μ is the mean value, and σ controls the degree of smoothing. By modulating these parameters, we achieved a seamless transition that aligns visually with the geological and ecological consistency of the landscape.

The combination of cubic and Gaussian interpolation allowed us to achieve a cohesive video sequence in which each frame blends naturally into the next, supporting the project’s artistic objectives. These smooth transitions are crucial for simulating the continuous flow of a natural environment, as they enable the viewer to experience the landscape as an interconnected whole rather than as disjointed scenes.

The artistic importance of smooth transitions lies in the engaging experience it provides. Unlike abrupt cuts or visual disjunctions, these interpolated transitions mimic the way an observer would move through a real environment, encountering gradual shifts in terrain and vegetation rather than stark separations. By reinforcing the sense of ecological unity, the video narrative encourages viewers to perceive the park not as a collection of isolated scenes, but as a seamless ecosystem. This approach also supports the ecological message of the project, emphasizing the interconnectedness and continuity of natural landscapes.

While Skorokhodov et al. focused on generating spatially continuous images that could seamlessly transition across arbitrary scenes, our work diverges in both technical and artistic objectives. Technically, Skorokhodov’s SA-AdaIN approach was designed to generate spatially equivariant images across any latent input, creating a flexible but generalized output. In contrast, our method focuses on maintaining continuity within a finite, thematically consistent sequence that captures the ecological diversity of a single natural park. The controlled latent space interpolation used in our project supports transitions across scenes while retaining the visual coherence of a single, continuous landscape.

Artistically, this work is rooted in ecological continuity, using smooth latent space transitions to illustrate the seamlessness of natural ecosystems. The generated landscape sequence is designed not only to provide a compelling visual experience but also to convey an implicit narrative of interconnectedness, reinforcing the conservation message central to the project. By presenting an unbroken landscape, we underscore the unity and resilience of natural ecosystems, supporting an ecological perspective that values preservation.

3.4 Sound Generation

To enhance the sensory engagement of the visual narrative, algorithmically generated soundscapes accompany the scenes, amplifying the thematic elements of the project. We employed two advanced text-to-sound models, Stable Audio [1] and AudioGen [10], chosen for their ability to synthesize high-quality, expressive soundscapes from descriptive text prompts. These models were selected for their complementary strengths in creating nuanced audio that aligns with the complex and varied natural scenes generated by StyleGAN2-ADA.

The audio synthesis process involved crafting textual prompts derived from the ecological features and place names associated with each generated scene. These prompts were carefully curated to evoke specific ambient sounds reflective of natural landscapes, such as "wind through trees," "flowing water," or "birdsong echoing." These descriptions were processed through Stable Audio and AudioGen, configured to produce distinct yet harmonious soundscapes tailored to the visuals. For instance, Stable Audio's settings emphasized clarity and depth in atmospheric sounds, while AudioGen's parameters introduced layered details, allowing for seamless blending of multiple environmental sounds.

The combination of these audio models was conducted as a deliberate artistic process, involving manual selection, layering, and refinement of the generated sounds to align with the visual transitions. Stable Audio was primarily used to establish foundational soundscapes with distinct background and foreground elements, creating an engaging ambiance that resonates with the visual flow. AudioGen complemented this by allowing the combination of multiple prompts into complex audio sequences, with transitions carefully designed to reflect changes in terrain, vegetation, and atmospheric conditions. This manual approach enabled fine-tuned synchronization and adaptation of the audio to the narrative flow.

The synchronization of audio with visuals was executed manually as part of the artistic process, ensuring that each sound aligned with transitions in the generated video. This careful timing was essential for creating a cohesive multi-sensory experience, where changes in terrain, vegetation, or atmospheric conditions were mirrored in the accompanying soundscape. For instance, the sound of rustling leaves fades as the scene transitions to a river valley, where the gentle flow of water takes prominence. This synergy between sound and visuals enhances the narrative's emotional resonance, encouraging viewers to perceive the landscapes as interconnected ecosystems rather than isolated scenes.

4 Generating the Unexplored: A Continuous Panorama

The culmination of the project is a video artwork that simulates a continuous, seamless exploration of the park's terrain. The modified StyleGAN2 generator produces a series of interconnected images, seamlessly transitioning from one scene to the next, as if a camera were panning across the landscape. This fluidity reflects the interconnectedness of the park's ecosystem, where towering rock formations, lush valleys, and hidden crevices seamlessly blend together. The intentional variation in the generated landscapes mirrors the natural rhythm and

diversity encountered during a bushwalk, capturing the essence of the nuanced and ever-changing terrain, offering viewers a glimpse into the vastness and complexity of the park.

A key artistic decision was to not push the training process to the utmost photorealistic precision. Instead, the focus was on generating landscapes that were evocative and emotionally resonant, even if they deviated slightly from strict realism. This allowed for more interesting and unconventional formations to emerge, capturing the essence of the unpredictable and sometimes surreal beauty found in the park. For instance, in Figure 1, the AI-generated landscape showcases a unique rock formation that, while not entirely photorealistic, possesses a captivating otherworldly quality. The interplay of light and shadow, the exaggerated textures, and the vibrant colors create a sense of awe and wonder, inviting viewers to contemplate the park’s hidden depths and unexplored corners.

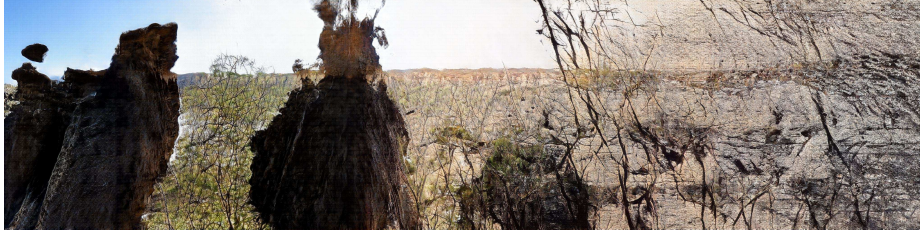


Fig. 1. A panoramic view of the generated landscape, showcasing the unique rock formations and their interaction with the surrounding vegetation, as generated by the StyleGAN2 model. The right side of the image transitions to close-up details of the generated rock formations, revealing intricate textures and patterns.

The generated landscapes also demonstrate a keen attention to color and composition. The warm hues of the sandstone cliffs contrast with the cool greens of the vegetation, creating a visually striking and harmonious palette. The composition of each scene is carefully considered, with a balance of foreground and background elements that guide the viewer’s eye through the landscape. In Figure 2, the panoramic view showcases a dramatic interplay between the rugged sandstone cliffs, the valley floor, and a meandering river. The composition draws the viewer’s gaze from the detailed rock formations in the foreground to the expansive landscape in the background, creating a sense of depth and scale.

Compared to real photographs of the park, the AI-generated landscapes exhibit a similar level of detail and complexity yet possess a unique artistic flair. The AI’s ability to extrapolate from the training data results in landscapes that are both familiar and novel, showcasing the park’s beauty while inviting viewers to reconsider their perceptions of nature and the role of technology in artistic expression.



Fig. 2. A panoramic view showcasing rugged sandstone cliffs, the valley floor, and a meandering river, transitioning from detailed rock formations to an expansive landscape.

5 Discussion

The artwork presented in this paper offers a multi-layered experience that transcends the mere representation of a landscape. While showcasing the natural wonders of a national park, the video subtly underscores its fragility in the face of nearby industrial activities. The continuous flow of the video serves as a metaphor for the ongoing struggle for preservation, urging viewers to contemplate the uncertain future of this irreplaceable landscape. The juxtaposition of pristine beauty and potential threats encourages reflection on the delicate balance between human activity and environmental conservation.

Through the innovative use of StyleGAN2-ADA, a curated collection of photographs, and algorithmically generated sound, this project pushes the boundaries of landscape generation, creating a unique and captivating exploration of a natural environment. The artwork not only showcases the park’s breathtaking beauty but also serves as a poignant commentary on the importance of preserving our natural heritage for future generations. Figures 1-8 offer a captivating visual journey through the park, revealing its diverse facets. Panoramic vistas (Figures 1 and 2) capture the grandeur and scale of the landscape, while close-up details of weathered rock formations (Figures 3, 4, 5, 7, and 8) reveal intricate textures, patterns, and diverse colors resulting from mineral deposits and erosion. The interplay between geological features and lush vegetation (Figures 1 and 6) further highlights the park’s rich biodiversity and the interconnectedness of its ecosystems.

By harnessing the power of AI to generate novel and unexpected variations of the landscape, the project invites viewers to contemplate the park’s hidden depths and unexplored corners. The artwork encourages a deeper appreciation of the park’s natural wonders, fostering a sense of urgency for its protection. By sparking conversation and reflection, this project aims to inspire action towards preserving this irreplaceable natural treasure. The project also engages with broader questions about the role of AI in art and environmental advocacy. By utilizing AI to generate novel representations of the natural world, the artwork challenges traditional notions of authorship and originality. It raises questions about the nature of creativity and the potential of AI to augment human

artistic expression. Furthermore, the project demonstrates the potential of AI-generated art to raise awareness about environmental issues and inspire action towards conservation. By presenting the landscape in a visually compelling and emotionally resonant way, the artwork can engage a wider audience and foster a deeper connection to the natural world. However, the project also acknowledges the limitations of AI in capturing the full complexity and nuance of the natural world. The artwork does not attempt to replace or replicate the experience of being physically present in the park but rather offers a complementary perspective that can enhance our appreciation and understanding of it.



Fig. 3. A generated landscape showcasing the contrasting textures of the smooth, distant hills and the rugged, weather-worn rock formations in the foreground. The image transitions from the expansive landscape on the left to the intricate details of the eroded rock on the right.

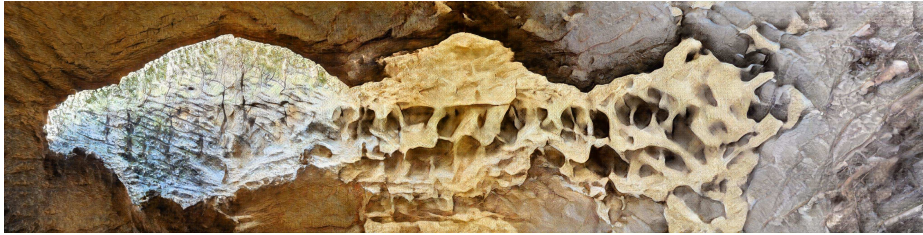


Fig. 4. A close-up view of a rock formation, generated by the StyleGAN2 model, showcasing the intricate patterns and textures resulting from erosion and weathering. The image reveals the rich geological history and the diverse mineral composition of the rocks, with colors ranging from ochre to rust to deep brown. On the right side, we can see the beginning of the transition towards a distant view, blurring the details of the rock formation and hinting at the vastness of the surrounding landscape.

6 Conclusions and Future Directions

In conclusion, this paper has presented a detailed case study on the use of StyleGAN2-ADA for generating AI-driven landscape art, highlighting both the technical methodologies and the environmental implications. By leveraging a curated dataset of photographs and incorporating algorithmically generated sound, the project creates a visually engaging and continuous exploration of a protected landscape.

Technically, this work contributes to the field of AI-generated art by showcasing the capabilities of StyleGAN2-ADA in generating diverse and realistic landscapes. The use of latent space interpolation to create seamless transitions between images further enhances the artistic potential of this model. Artistically, this project pushes the boundaries of environmental art by utilizing AI to generate novel interpretations of the landscape. The artwork's subtle commentary on environmental issues encourages viewers to reflect on their relationship with nature and consider the impact of human activities on the environment. Future directions for this project could explore the use of larger and more diverse datasets, as well as the incorporation of real-time environmental data, to create even more dynamic and responsive artworks. Additionally, the project could be expanded to include interactive elements, such as virtual or augmented reality experiences, to further immerse viewers in the generated landscapes and enhance their understanding of the environmental issues at stake. By continuing to explore the intersection of AI, art, and environmental advocacy, we can create new and powerful ways to engage audiences with critical issues facing our planet and inspire action towards a more sustainable future.

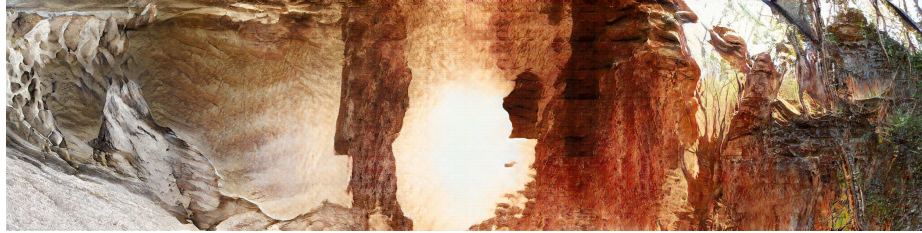


Fig. 5. A close-up generated detail of a sandstone formation showcasing the intricate weathering patterns and the textural diversity. The image transitions from smoother, layered textures on the left to deeply pitted and weathered surfaces on the right, highlighting the dynamic geological processes shaping the landscape.

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Fig. 6. A generated close-up of sandstone cliffs, showcasing the intricate weathering patterns and diverse colors resulting from mineral deposits and erosion. The image transitions from smoother, layered textures on the left to more weathered and rugged surfaces on the right, revealing a glimpse of the lush rainforest that can also be found within the park's diverse ecosystems.



Fig. 7. A generated close-up of weathered sandstone formations, showcasing intricate textures and patterns resulting from erosion. The left side of the image reveals bulbous, wave-like formations, while the center transitions to smoother, layered textures. The right side hints at the beginning of a transition to a broader landscape view, with the appearance of vegetation and a shift in focus towards the horizon.

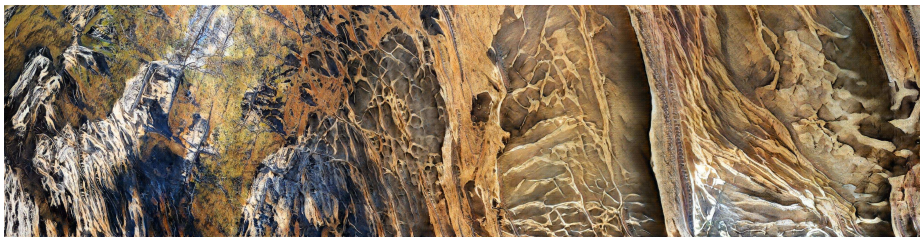


Fig. 8. A generated close-up of weathered sandstone formations, showcasing intricate textures and patterns resulting from erosion. The left side of the image reveals a glimpse of the surrounding landscape, hinting at the presence of trees and vegetation in the background. The center of the image is dominated by bulbous, wave-like formations, while the right-side transitions to more linear, striated patterns, highlighting the diverse geological processes shaping the rock formations.

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