



# Creating a NFT using Origina.ls

Henri Huotari

Bachelor's thesis

December, 2022

Information Technology

Information and Communication Technology

**Huotari, Henri**

**Creating a NFT using Origina.ls**

Jyväskylä: JAMK University of Applied Sciences, November 2022, 30 pages.

Information Technology, Degree Program in Information and Communications Technology. Bachelor's thesis.

Permission for open access publication: Yes

Language of publication: English

**Abstract**

The bachelor's thesis was assigned by Sumo Apps Ltd. Sumo offers a suite of creative tools and helped develop a brand-new platform called Originals. (<https://origina.ls>). Originals is a NFT Marketplace on which you can create beautiful images with AI or by painting on Sumopaint. The first idea we had for this thesis was to create a NFT collection with sumo, but as Originals got launched just in time for Slush 2022 and just before this thesis is published, I felt that the platform we created is the perfect centerpiece. The popularized methods for creating NFTs from art have been dependent on the artist creating the art on another application or platform. New web technologies and applications like Sumopaint and the development of Web3 technologies have made it possible to create art and NFTs on the same platform. Origina.ls was created to fill this void in the NFT art space, and I've gathered information and research on the subject to demonstrate how easy it is for the user to create art and NFTs of said art on one platform. I also go through the steps of creating an NFT in a more traditional way without using any external platform. Further, NFTs and the technologies behind them are presented and statistics from some of the marketplaces are displayed.

**Keywords/tags (subjects)**

NFT, Sumo, Blockchain, Crypto, Art, Origina.ls, Originals, NFT Marketplace, Sumopaint, Solana, Polygon

**Miscellaneous (Confidential information)**

No confidential information is displayed on this thesis.

Huotari, Henri

## NFTn luominen Originals.is alustalla

Jyväskylä: Jyväskylän ammattikorkeakoulu, Joulukuu 2022, 30 sivua.

Tietojenkäsittely ja tietoliikenne. Tieto- ja viestintätekniikan tutkinto-ohjelma. Opinnäytetyö AMK.

Julkaisulupa avoimessa verkossa: Kyllä

Julkaisun kieli: englanti

## Tiivistelmä

Opinnäytetyön tilaajana toimi Sumo Apps Ltd. Sumo tarjoaa joukon luovia työkaluja ja auttoi kehittämään täysin uutta Originals-alustaa. (<https://origina.is>). Originals on NFT-kauppapaikka, jossa voit luoda kauniita kuvia tekoälyllä tai piirtämällä Sumopaintilla. Ensimmäinen idea, joka meillä oli tätä opinnäytetyötä varten, oli luoda NFT-kokoelma sumolla, mutta kun Originals lanseerattiin juuri ajoissa Slush 2022:n ja juuri ennen tämän opinnäytetyön julkaisua, minusta tuntui, että luomamme alusta on opinnäytetyölle täydellinen keskipiste. Popularisoidut menetelmät NFT:iden luomiseksi taiteesta ovat olleet riippuvaisia taiteilijasta, joka on luonut taiteen toisella sovelluksella tai alustalla. Uudet verkkoteknologiat ja -sovellukset, kuten Sumopaint ja Web3-tekniikoiden kehitys, ovat mahdollistaneet taiteen ja NFT:n luomisen samalla alustalla. Originals luotiin täyttämään tämä aukko NFT-taidetilassa, ja olen kerännyt aiheesta tietoa ja tutkimusta osoittaakseni, kuinka helppoa käyttäjän on luoda taidetta ja NFT kyseisestä taiteesta yhdelle alustalle. Käyn läpi myös NFT:n luomisen vaiheet perinteisemmällä tavalla ilman ulkoista alustaa. Lisäksi esitellään NFT:t ja niiden taustalla olevat tekniikat sekä joidenkin markkinapaikkojen tilastoja.

## Avainsanat (asiasanat)

NFT, Sumo, Lohkoketju, Kryptovaluutta, Taide, Originals.is, Originals, NFT-kauppapaikka, Sumopaint, Solana, Polygon

## Muut tiedot (salassa pidettävät liitteet)

Ei salassapidettäviä liitteitä.

## Contents

<b>1</b>	<b>Introduction .....</b>	<b>2</b>
<b>2</b>	<b>Non-Fungible Token - NFT .....</b>	<b>3</b>
2.1	What is an NFT? .....	3
2.2	Why are NFTs interesting? .....	4
2.3	Investing in classic art vs NFTs .....	4
2.4	Taxation of profits from NFTs .....	5
2.5	Self-fulfillment.....	5
2.6	Being able to share your vision with the world .....	5
2.7	The opportunity of creating wealth from your art .....	6
2.8	Cutting edge technology .....	6
2.9	Current benefits of the tech.....	6
2.10	Potential future uses .....	6
<b>3</b>	<b>Blockchain .....</b>	<b>7</b>
3.1	Licensing .....	7
3.2	NFT Marketplaces .....	8
3.3	Crypto wallets .....	10
<b>4</b>	<b>Different types of NFT owners.....</b>	<b>10</b>
4.1	The Artist .....	10
4.2	The Buyer .....	10
4.3	The Collector .....	11
<b>5</b>	<b>Tools for creating NFTs.....</b>	<b>11</b>
5.1	Sumopaint .....	12
5.2	Sumotunes .....	13
5.3	Sumo3D .....	13
5.4	Sumo Mandala .....	14
<b>6</b>	<b>NFT Creation Process without Origina.ls .....</b>	<b>15</b>
6.1	Creating the artwork .....	16
	<b>References .....</b>	<b>26</b>

## Figures

Figure 1 - Traders by Market (Dedezade 2021) .....	9
Figure 2 - Sumopaint .....	12
Figure 3 - Sumotunes .....	13
Figure 4 - Sumo3D .....	14
Figure 5 – Sumo Mandala #001 .....	15
Figure 6 - Sumopaint X with the AI generated layer .....	16
Figure 7 - Cyberpunk Skyline NFT .....	17
Figure 8 - The python code for creating the NFT .....	18
Figure 9 - Checking Python Version .....	19
Figure 10 - Running the NFT minting script .....	19
Figure 11 - Creating your artwork with Originals AI .....	20
Figure 12 - AI Generated Picture .....	21
Figure 13 - Saved work in Originals .....	21
Figure 14 - Create NFT Button appeared .....	22
Figure 15 - NFT Creation Modal .....	23

# 1 Introduction

NFTs and cryptocurrencies are currently gaining a lot of traction around the world. Sumo aims to get ahead of the competition and showcase that making art and creating NFTs based on them is possible. The purpose of this thesis is to explain this process in detail. Anyone is capable of making art, but most people do not know that they can create a NFT based on that art.

Sumo is also in the process of creating a NFT creation website and marketplace called Origina.ls with a company called Crypto Create, which is one of the reasons I decided to tackle this subject in my thesis. As we are progressing as a company and we want provide our staff with new information, but also we want to inform our users that there is so much more they can do with the Sumo Creative Suite and how the works they create with the Sumo's apps does not have to be limited to just being a file on your computer or in the cloud, it can actually be an asset worth something.

My personal experience on NFTs is limited to owning them. I have never created an NFT by myself and I want this thesis to include answers to all the questions that come up while creating my first collection.

## 2 Non-Fungible Token - NFT

### 2.1 What is an NFT?

NFTs, or non-fungible tokens, are a phenomenon that has gained a lot of attention and popularity lately. The tokens are linked to various types of assets and signify ownership as stated in the following chapters. NFTs are stored on a blockchain, and each NFT has a unique ID that cannot be changed.

NFTs are tokens that we can use to represent ownership of unique digital items. They let us tokenize things like art, collectibles, even real estate. They can only have one official owner at a time, and they are secured by the blockchain – no one can modify the record of ownership or copy/paste a new NFT into existence. (*Non-fungible tokens (NFT)*)

Every NFT is a part of a blockchain. There is a common misconception about NFTs which is that if you screenshot an NFT, or download the file if it is available, you have the same thing as the owner of the piece. You can buy a Monet print and put it in a similar frame as the original, but that does not mean you own the painting. (Mitchell Clark, The Verge, 2021; “NFTs, explained”)

Sebastian Smee wrote on The Washington Post that a NFT is “a unique digital representation of a good — for our purposes, a work of art. It’s akin to a certificate of authenticity or a deed and it’s recorded on a blockchain.”

## **2.2 Why are NFTs interesting?**

NFTs are interesting because they are non-fungible. That is, they have no value until they are used, and they certainly don’t have any value until the consumer owns them. So, what are the different aspects of NFTs that make them so appealing for consumers?

NFTs could be described as digital scarcity. Let’s take an ordinary token: a dollar. The person who has \$1,000 in their wallet can spend it on a variety of things, from buying groceries to buying a house. The more people who have NFTs in their wallets, the better their value is exposed and the more valuable it becomes to them; thus, we can say that NFTs are fungible tokens in that sense.

They could also be described as durables because the value of any NFT is tied to its ownership. That makes them very powerful tools for marketing — being able to “sell” items by presenting a new item as having already been owned by someone else (i.e., you can use your own NFT to show you bought something!)

## **2.3 Investing in classic art vs NFTs**

The classic art market is one of the best-known segments of the world’s retail investment market. Its popularity started in the late 19th century, when several wealthy Americans and Europeans began buying art, primarily for its aesthetic appeal. In recent years, however, the revival of interest in collecting has resulted in an increasing number of investors seeking to beat the market. A number of transparent and efficient platforms that offer liquidity, low fees, and 24/7 trading have made investing in art more accessible than ever before. The rise of online art galleries and

the popularity of art investment funds have also increased the pool of available investment opportunities.

## **2.4 Taxation of profits from NFTs**

The taxation of NFTs differs from country to country. This is one of the main reasons why NFTs have become so popular. The taxation of NFTs is done differently by different countries for various reasons, mainly because of their tax laws and regulations.

In the United States, for example, the Internal Revenue Service has not provided any specific guidance on the taxation of NFTs. However, the IRS has said that it will treat NFTs as property for tax purposes. This means that any profits made from the sale of NFTs will be subject to capital gains tax.

In the United Kingdom, the tax treatment of NFTs will depend on their nature and use. If an NFT is bought for personal use, such as collecting or display, then it will be treated as a personal asset and will not be subject to capital gains tax. However, if an NFT is bought for investment purposes, then it will be treated as a financial asset and will be subject to capital gains tax.

## **2.5 Self-fulfillment**

Artists have had the ability to make NFTs by themselves for as long as blockchains have existed, but now it is even easier for artists to turn their artworks into NFTs. With origina.ls, you can create art in your browser and turn it into an NFT just by saving it, which revolutionizes the workflow of creating art into NFTs. Creating art has never been easier than with the Sumo Paint integrated into origina.ls, which enables the user to draw and create digital art in their browser.

## **2.6 Being able to share your vision with the world**

NFTs are truly a way for artists to share their vision and skills with the world while keeping the ownership of their works. Artists who are looking to make some money off their art, can now set a price for their works when releasing them and share them in a format where it can be bought instantly, but they do not have to. Artists can make NFTs and not put them up for sale if they do



not want to. A NFT collection can be just a showcase, and it can be put up for sale later if that is what the artist wants.

## **2.7 The opportunity of creating wealth from your digital art**

Creating wealth from digital art has always been a hard thing to do for artists, but NFTs have brought a new way of turning your digital art into money. NFTs have given an opportunity to make your digital art recognizable as an item with value. Many artists have created digital art and sold physical prints of that art, but now they can sell the actual digital art piece as is, without the need of it being a physical item. Songs, videos, 3D models, and other forms of art are all possible to be monetized by selling them as NFTs.

## **2.8 Current benefits of the tech**

There are several huge benefits in the blockchain technology and NFTs, one of which being instant transferability. You cannot instantly transfer a painting from the seller to the buyer, but with NFTs the transfer is instant because it happens over the internet in peer-to-peer fashion. NFTs can also represent other things, physical or digital. One of the biggest benefits is in the gaming industry, where in-game items can be NFTs, and the value of those items can be determined by the players. NFTs are also stored in a blockchain, making them impossible to get lost or stolen without the owner losing the access to it because of their own negligence. A house can get burned down by a forest fire, and there is nothing the owner can do to prevent it. NFTs give the owner the ability and responsibility to keep them safe.

## **2.9 Potential future uses**

As a tech expert, I feel that NFTs are going to be one of the defining features of the technological landscape in the next decade. The rise of crypto currencies and related innovations (such as decentralized applications and blockchain) have led some commentators to predict that we will witness a new “new internet” with new forms of digital communication, new forms of decentralization and new forms of ownership and control. While such developments are likely to

take place, it is also likely that we will see a wide variety of existing technologies, from car telematics to smart contracts in financial markets, increasingly become decentralized. The potential of NFTs and the crypto industry in general is remarkable.

### **3 Blockchain**

The concept of blockchain was introduced to the world in a finalized format by Satoshi Nakamoto in 2008 and the technology has since been utilized for various digital projects. (Nakamoto, 2008)

A blockchain is a digital database, usually in the form of a public ledger which stores information across a network of machines. Transactions on a blockchain can be verified without the need for any central authority, like banks or governments, and are supposed to be impossible to change, hack or corrupt, of course what in technology is called impossible, actually just means that it hasn't been done yet. Each transaction is time-stamped and added to a growing chain of blocks that consist of data. (Sebastian Smee, The Washington Post, 2021; Will NFTs transform the art world? Are they even art?)

These transactions are subject to transaction fees, which differentiate a lot with different blockchains. I will be using Solana as my blockchain of choice for the manually created NFT because it has low fees and good intriguing NFT marketplaces.

While the transactions themselves might be supposedly impossible to hack, some individuals still manage to lose their NFT's by becoming victims of social engineering or other types of malicious practice. Most cases where assets get lost by their rightful owners end up being the fault of the owner by not keeping their passphrase in a secure location.

#### **3.1 Licensing**

Even though NFTs only recently became popular and are still a quite unfamiliar type of asset for most people, the law regarding copyright will treat NFTs the same as any other traditional artwork (Fuchs, 2022). When creating a new work of art with Sumo Apps, one will automatically acquire a copyright of that new artwork. That also means they have exclusive rights to reproduce the work, create derivative works, and distribute copies of the work. Thus, they have exclusive rights to

make an NFT based on an original piece of artwork they have produced because “creation of an NFT can be categorized as a copy or even a derivative of the original work.” (Alexandra Fuchs, IP Harness, 2022; NFTs and Copyright Law)

### 3.2 NFT Marketplaces

The ten largest marketplaces of the NFT marketplaces cover more than 90% of the total NFT market turnover. According to DappRadar's market monitoring data NFTs sales volume rose to \$ 10.7 billion in the third quarter of 2021, which is eight times that of the second quarter. (Lucker, 2021)

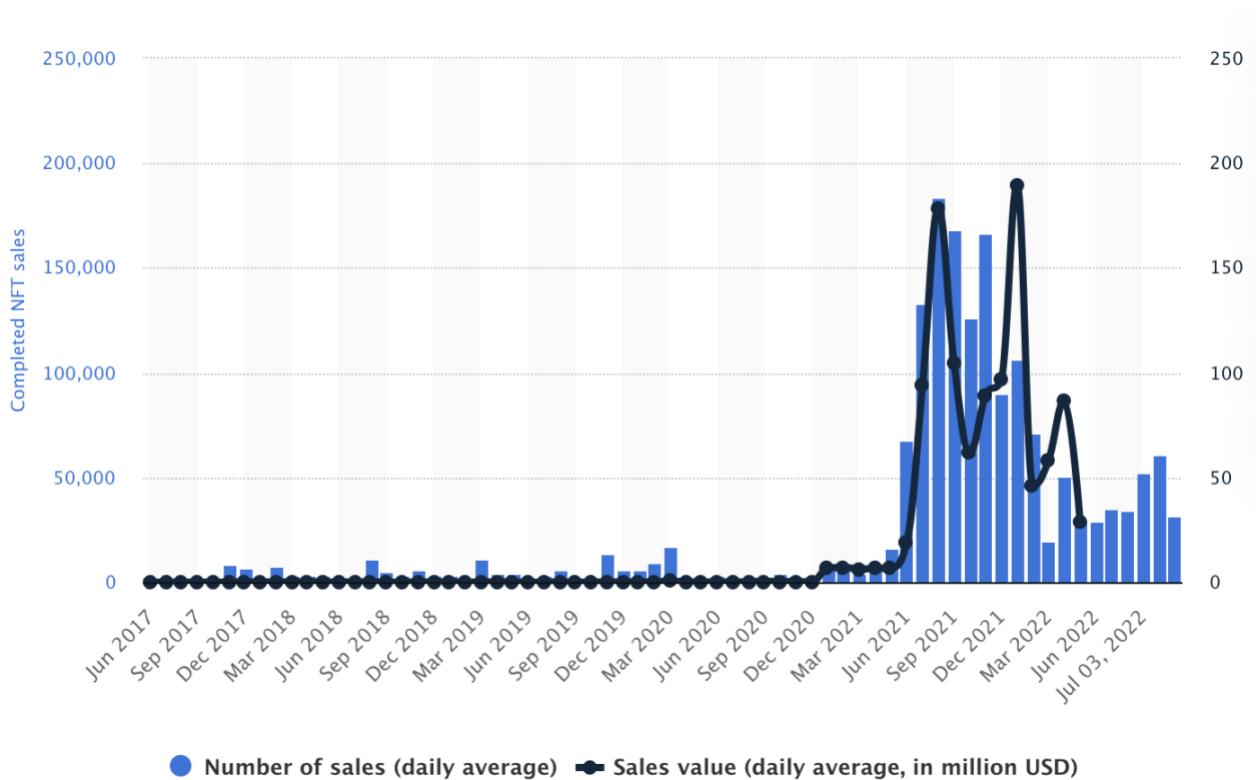


Figure 1 - Average number and value of completed NFT sales on the Ethereum blockchain up to May 5, 2022 (Statista)

There are different types of NFT marketplaces. Other marketplaces may focus on for example art and others on collectibles, but the concept remains the same (Lucker, 2021). The marketplaces for NFT works are curated and non-curated marketplaces. Artists are selected to the curated marketplaces, and anyone can sell their NFT works in non-curated marketplaces. Nifty Gateway and Makersplace are curated marketplaces. Non-curated marketplaces include OpenSea and Rarible. (Koistinen 2021)

In October 2021, there were over 46000 traders on OpenSea. (Dedezade 2021)

### Traders by Market - October 2021

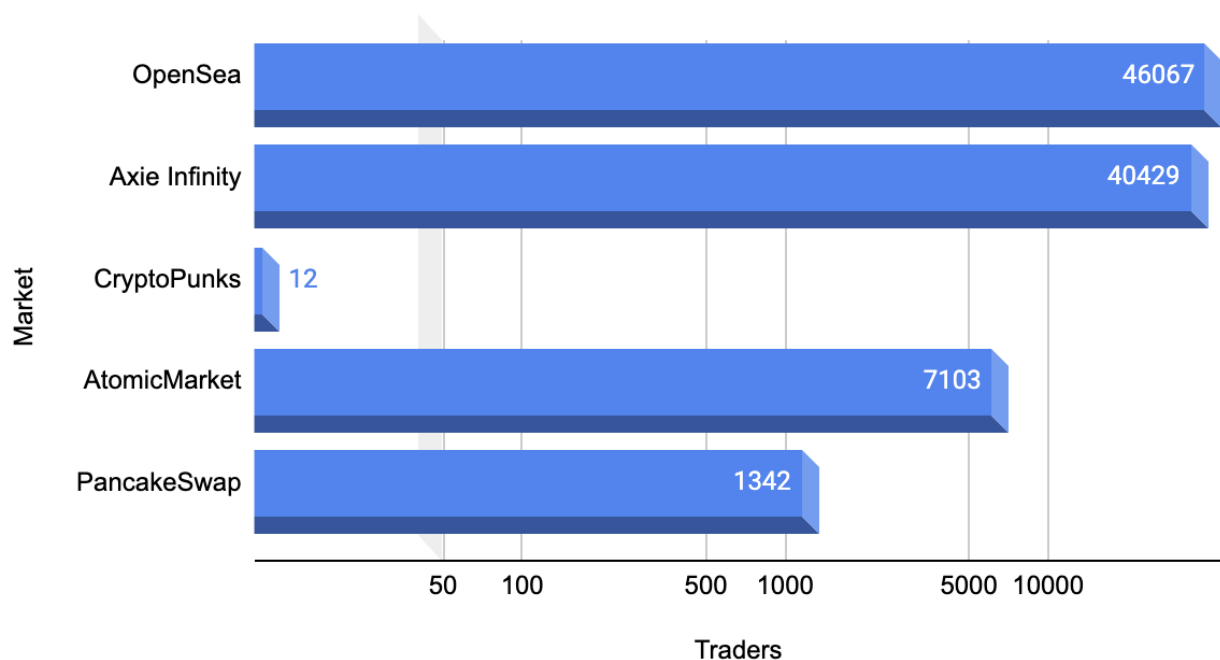


Figure 2 - Traders by Market (Dedezade 2021)

Originals is a different kind of NFT marketplace because you can create your art directly on the marketplace and the artist is not selling the artwork directly with cryptocurrency, but is rather using Originals Credits, which can be bought with US Dollars.

### 3.3 Crypto wallets

Before owning any cryptocurrencies or NFTs, you usually need to have a wallet to store them in. There are multiple options to choose from, but there are some popular wallets that are used by most. The Ascent Staff listed some of the most popular wallets:

1. Metamask
2. Math Wallet
3. AlphaWallet
4. Trust Wallet
5. Coinbase Wallet

I'm quite familiar with some of these, having used Metamask, Trust Wallet and Coinbase for buying and holding cryptocurrencies, but there is one more wallet I have personally used, called the Phantom Wallet. I own some NFTs in that Phantom Wallet on the Solana blockchain.

What is amazing about the Origina.ls platform, is that the NFTs don't need a wallet to be minted, but they can still be gotten to a personal wallet if the creator wants to do so.

## 4 Different types of NFT owners

### 4.1 The Artist

An artist has a multitude of reasons to create NFTs from their artworks. Creating NFTs will allow the artist to sell their works that there otherwise might not be much of a market for. NFTs also have a feature that lets the artist enable a feature that will pay them a percentage every time it is sold in perpetuity. This will ensure that the artist will see a part of the value if the work gets more popular and multiplies in value. (Clark, 2021).

### 4.2 The Buyer

A buyer is supporting the artist financially by buying an NFT from the artist, but that is not usually the main reason to acquire one. The difference between a buyer and a collector is that a buyer is not buying it for the sole purpose of making a profit, but is buying the NFT because they want to own the asset. (Mitchell Clark, The Verge, 2021; "NFTs, explained")

### **4.3 The Collector**

A collector is buying the NFT with financial profit in mind. Collectors usually buy several items from the same collection and hold them in their wallet speculating that the value of the asset will rise and then they can sell them with a profit. Alternatively they can sell their holdings to cut losses if the price goes down enough.

## **5 Origina.ls**

Origina.ls is a NFT marketplace with a twist. The team was formed from Sumo Apps and CryptoCreate employees, and because of that collaboration, we were able to make an amazing product in a short period of time. The first meeting I attended concerning Origina.ls, was on 3<sup>rd</sup> of March, which is after I started creating this thesis. Over time it was reformed to its current form and is still a work in progress and being actively developed. The idea of Origina.ls was originally to just integrate Sumopaint and let our users create NFTs from their works in Paint, but as development went further and I created the AI image generator for Sumopaint, we also wanted to integrate it as part of Origina.ls.

### **5.1 OG Generator (Artificial Intelligence Image Generator)**

I created a service for Sumopaint, which we are calling AI. That lead to some ideas about having this same AI image generator inside the Origina.ls platform, even on the landing page. This will be presented in more detail later in this thesis. The OG Generator uses the Stable Diffusion model to generate images from prompts which the users give. It takes a lot of different parameters, in example step amount, sampler, config scale, width and height along with several others. From these parameters I found good values to use with our platform and OG Generator was created.

## **6 Tools for creating NFTs**

I will be using Origina.ls in my process of creating NFTs, but there are tons of tools on the internet suitable for creating art in various forms. I used Adobe Photoshop for multiple years when I was younger, which has given me a good base knowledge in graphic design and creating art. In this

chapter, I will show some apps that can be used for creating the art that can be made into NFTs later in the process.

## 6.1 Sumopaint

Sumopaint is a streamlined professional tool with everything you need to paint, design, edit photos or images and capture your imagination. The apps are fully web-based and provide an intuitive user experience. I've been using Sumopaint for a few years mostly for testing features and finding bugs, but I am quite certain that I can create something cool even though I am not that experienced in creating professional art. I also created a feature for Sumo Paint called AI, which stands for Artificial Intelligence, and it uses the Stable Diffusion artificial intelligence model. With this feature, the user is able to create art from text by writing anything they want to see. The prompt I used for the NFT I created was "futuristic nighttime cyberpunk city skyline landscape vista photography by Carr Clifton & Galen Rowell, 16K resolution, Landscape veduta photo 8k resolution, detailed landscape painting, DeviantArt, Flickr, rendered in Enscape, Miyazaki, Nausicaa Ghibli, Breath of The Wild, 4k detailed post processing, atmospheric, hyper realistic, 8k, epic composition, cinematic, artstation —ar 16:9"

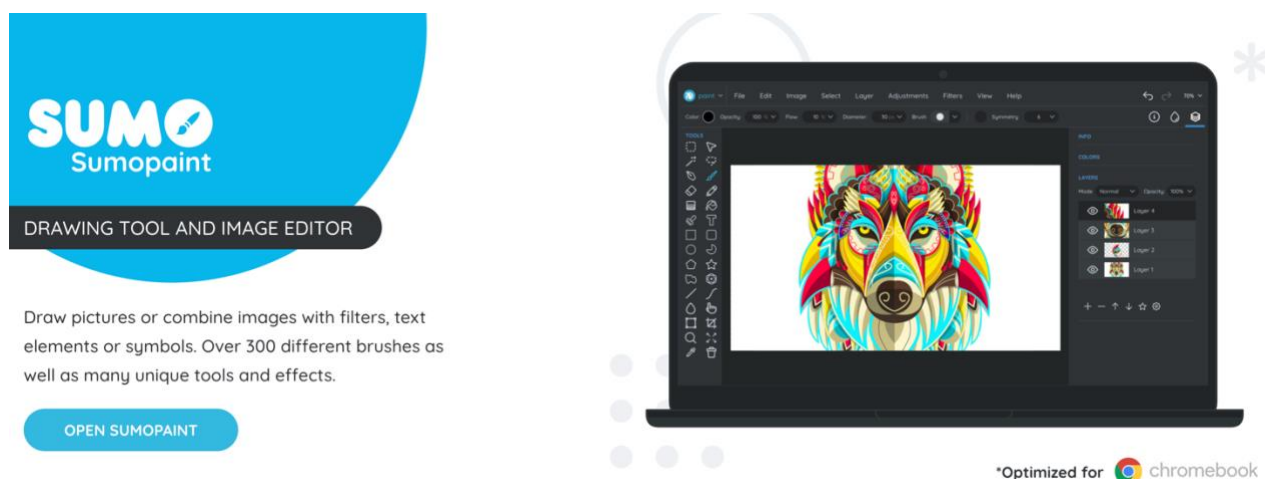


Figure 3 - Sumopaint

The Sumo Apps team also has a new version of Sumopaint in production, which in development was called Sumopaint X and it is made with WebAssembly and React. This version of Sumopaint is groundbreaking in many ways, but most importantly it works on any device because it is just a webpage with amazing technology behind it.

## 6.2 Sumotunes

Sumotunes is a music creation application for users of all ages. The app is a simplified tool designed for composing music and it comes with a huge selection of different instruments and sound effects.

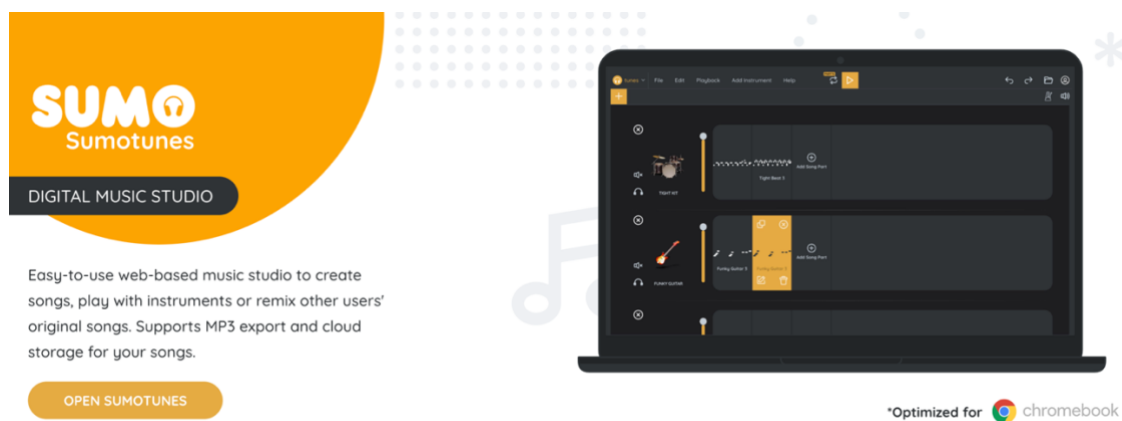


Figure 4 - Sumotunes

## 6.3 Sumo3D

Sumo3D is a tool for creating complex scenes and 3D models with different shapes and adjusters. Animated 3D NFTs have played an integral part in the NFT market for a while, and users are able



to make the artworks in Sumo3D for free.

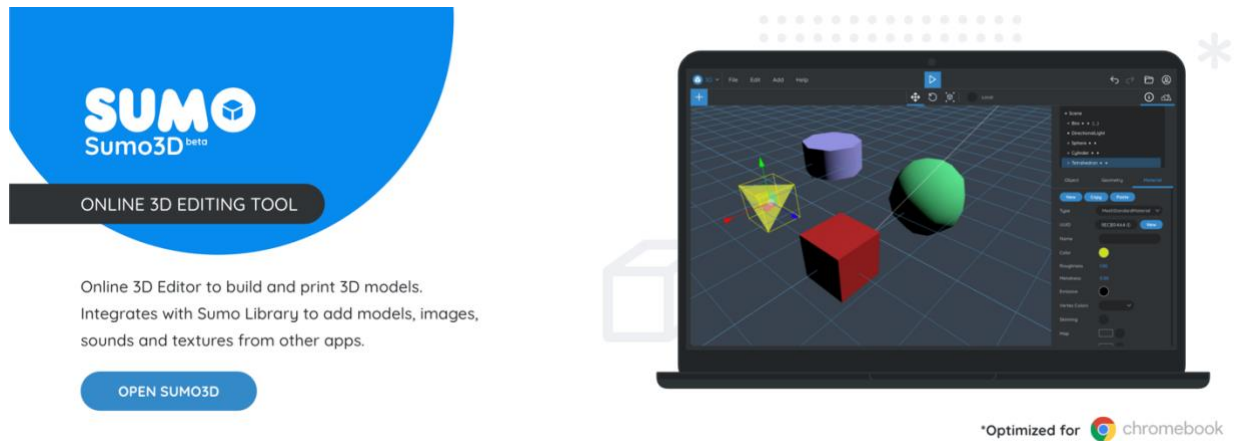


Figure 5 - Sumo3D

## 6.4 Sumo Mandala

The Sumo Mandala project is not currently in production yet. It is under development, but I have access to OmniGeometry which is what Sumo Mandala is based on. The original Omnigeometry developer is currently finalizing the implementation of the technology in the Sumo Creative Suite and the tool will be launched under the Sumo Mandala name. I'm planning to use Sumo Mandala/OmniGeometry to create some assets to use with Sumopaint and create NFTs in the future. I made one mandala NFT while learning the process of creating NFTs. Using OmniGeometry, I created a few mandalas and used the tracing feature to get a blurred moving effect. After creating the art, I uploaded it to my own server, so it was accessible from an URL,

which I used in the minting script.

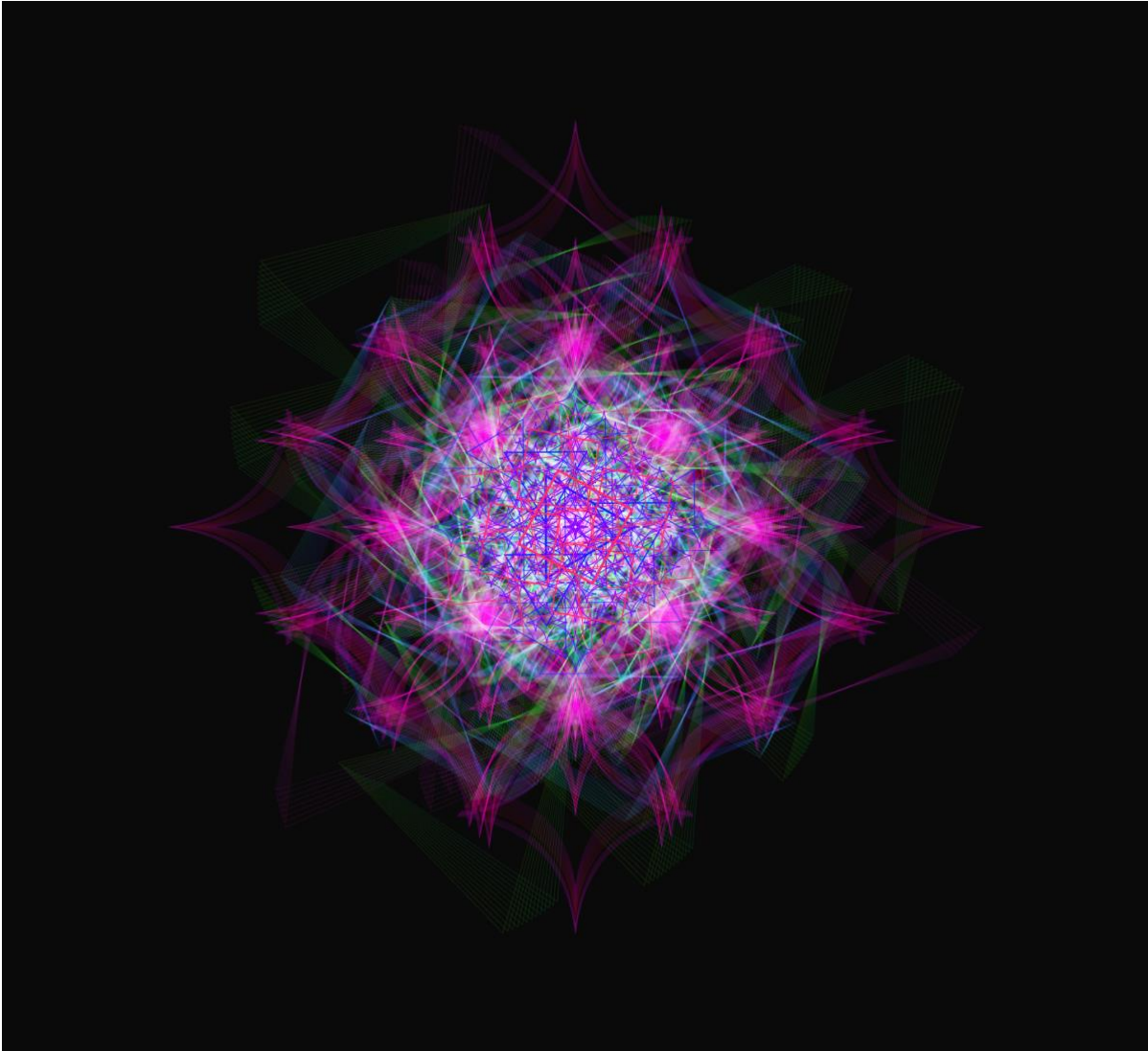


Figure 6 – Sumo Mandala #001

## 7 NFT Creation Process without Origina.ls

Creating a NFT is not the simplest process, which is why I will demonstrate every step of the process in detail. With Origina.ls, we aim to simplify this process to a one-click event where the user is able to create an NFT from their artwork with ease and without any coding skills.

## 7.1 Creating the artwork

First, one needs to create the artwork they plan to create an NFT from. For this I will be using the beta version of Sumopaint called Sumopaint X, and the feature I created called AI. AI is an image generator that uses the artificial intelligence model called stable diffusion.

The Sumo Mandala NFT was just for my own rehearsal, so I created one more just for the sake of this thesis. This new NFT is called Cyberpunk Skyline, and it was created with Sumo Paint using the Stable Diffusion Artificial Intelligence.

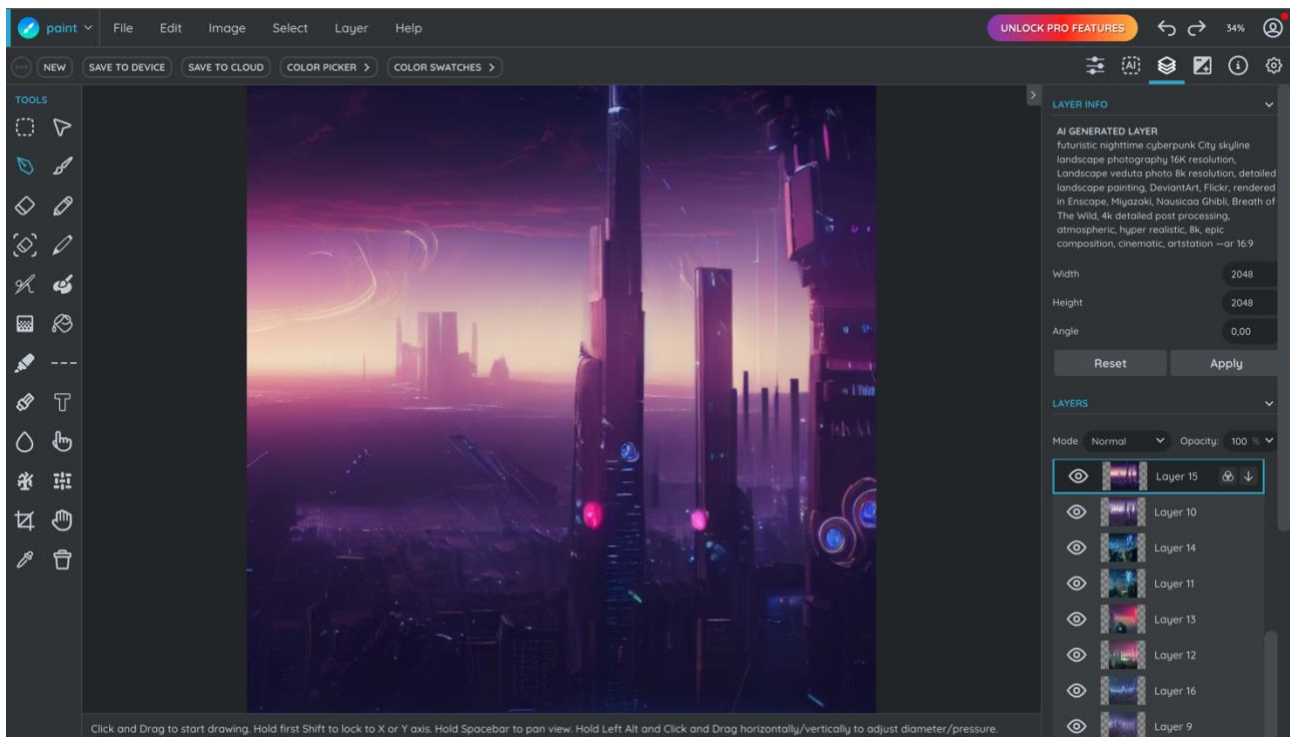


Figure 7 - Sumopaint X with the AI generated layer

After having an artwork I was happy with, I exported it as a png file and uploaded it to my server. This allows me to use the URL for the work when making it into an NFT.



Figure 8 - Cyberpunk Skyline NFT

## 7.2 Writing the NFT Minting Script

For minting the NFT, I'm using the Blockchain API and python. Below is the script I used to mint the NFT. I changed all the information that is sensitive to something else, like the API key id, secret key, and the private key of my Solana Wallet. In the figure below, I will show the python code to create a NFT the traditional way.

```

from theblockchainapi import \
    TheBlockchainAPIResource, SolanaCurrencyUnit, SolanaNFTUploadMethod, SolanaNetwork, DerivationPath,
    SolanaWallet

# API Key is from https://dashboard.blockchainapi.com/
MY_API_KEY_ID = 'API KEY'
MY_API_SECRET_KEY = 'SECRET'
# Define Blockchain API Credentials to the API
BLOCKCHAIN_API_RESOURCE = TheBlockchainAPIResource(
    api_key_id=MY_API_KEY_ID,
    api_secret_key=MY_API_SECRET_KEY
)

def mint():
    # Check for API key and Secret
    try:
        assert MY_API_KEY_ID is not None
        assert MY_API_SECRET_KEY is not None
    except AssertionError:
        raise Exception("Fill in your key ID pair!")
    # Define Wallet
    wallet = SolanaWallet(
        derivation_path=DerivationPath.CLI_PATH,
        passphrase=str(),
        private_key=None, # OR You can supply this instead. e.g, [11, 234, ... 99, 24]
        b58_private_key="FILL" # Private key for the wallet from which the minting fee will be taken
    )
    public_key = "5kv9MMtgno5yx2Hgy763mNZ4aczszL4oXMLwMjnZ6MT2" # Wallet to receive the NFT

    print(f"Public Key: {public_key}") # Print Public key to console
    # Get and print wallet balance to make sure it can make the NFT
    def get_balance():
        balance_result = BLOCKCHAIN_API_RESOURCE.get_balance(
            public_key,
            unit=SolanaCurrencyUnit.SOL,
            network=SolanaNetwork.MAINNET_BETA
        )
        print(f"Balance: {balance_result['balance']}")
    get_balance()

    # Mint an NFT
    nft = BLOCKCHAIN_API_RESOURCE.create_nft(
        wallet=wallet,
        mint_to_public_key=public_key, # Receiving wallet
        nft_name="Cyberpunk Skyline #001", # This is the NFT name
        nft_symbol="CySky", # Symbol
        nft_url="https://huotari.solutions/NFT/cyberpunk-skyline.png", # URL to the work
        nft_upload_method=SolanaNFTUploadMethod.S3, # Upload method from blockchain API
        network=SolanaNetwork.MAINNET_BETA, # We are using the mainnet, because it's not a test
        nft_description="Cyberpunk Skyline #001", # Description, i used the name, should be longer
        creators=[
            "AnToFzzKd28aVrrrHRRw4bq4FbZ4LDKABFnZef9PoyqUY",
            public_key
        ],
        share=[0,100], # Share is distributed 100% to the
        seller_fee_basis_points=100,
        is_mutable=False,
        is_master_edition=True
    )
    print("NFT: ", nft)
    print(f"You can view the NFT here: {nft['explorer_url']}")

if __name__ == '__main__':
    mint()

```

Figure 9 - The python code for creating the NFT



### 7.3 Running the NFT minting script

The NFT minting script must be run from the command line. Before running the script, the user must do some prerequisites, which are installing Python and making it accessible through command line. My python version is 3.10.1, and it can be checked by running the command “python3 --version”.

```
henri@Henri-MacBook-Air ~ % python3 --version
Python 3.10.1
```

Figure 10 - Checking Python Version

This also confirms that Python is installed correctly and that the NFT minting script can be run. The next step is to run the script. The command to running the script is “python3 path\_to\_script.py”, so in our case it’s “python3 create\_nft\_cyber.py” because I had already navigated to the folder containing the script.

```
henri@Henri-MacBook-Air SolanaNFT % python3 create_nft_cyber.py
Public Key: 5kv9MMtgno5yx2Hgy763mNZ4aczssL4oXMLwMjnZ6MT2
Secret Recovery Phrase:
Balance: 2.042387384
NFT: {'confirmed': True, 'data': {'creators': ['AnToFzzKd28aVrrHRRw4bq4FbZ4LDKABFnZef9PoyqUY', '5kv9MMtgno5yx2Hgy763mNZ4aczssL4oXMLwMjnZ6MT2'], 'name': 'Cyberpunk Skyline #001', 'seller_fee_basis_points': 100, 'share': [0, 100], 'symbol': 'CySky', 'uri': 'https://blockx-api-storage.s3.amazonaws.com/57523232689/data', 'verified': [False, True]}, 'explorer_url': 'https://explorer.solana.com/address/B85q3iFauWWRkAMym4MbTyxDx9Uhn4U1KifbJyD9MC3u?cluster=mainnet-beta', 'is_mutable': False, 'mint': 'B85q3iFauWWRkAMym4MbTyxDx9Uhn4U1KifbJyD9MC3u', 'mint_secret_recovery_phrase': 'XTjFy32j6ia32Fjd1VUKJAXQr8NHtt9RwoVzdu1WcSwjiGBac6dDapzb3TrBraW6d7GEK3ocW8mZ', 'primary_sale_happened': False, 'transaction_signature': '64b2ifrTndVM'}, 'update_authority': '5kv9MMtgno5yx2Hgy763mNZ4aczssL4oXMLwMjnZ6MT2'}
You can view the NFT here: https://explorer.solana.com/address/B85q3iFauWWRkAMym4MbTyxDx9Uhn4U1KifbJyD9MC3u?cluster=mainnet-beta
henri@Henri-MacBook-Air SolanaNFT %
```

Figure 11 - Running the NFT minting script

This gives a console output containing the data for the NFT along with the link to the NFT on the blockchain, on the last line of the output. This link takes you to the public information of the NFT. The challenge in this process is the amount of information one needs to have before starting to create the NFT from their art. All these challenges and hard steps are solved in our new platform, origina.ls.

## 8 Creating NFTs with Origina.ls

Origina.ls is a platform for artists to create art by drawing or with our AI tool. Easiest way to create art is by writing what you want to see in a few words, and the AI takes care of the rest. This

feature was creating a lot of positive feedback at Slush 2022, where we had a booth with Sumo Apps. The process of creating an NFT with Originals.is, is very simple and easy, and most importantly free for the user.

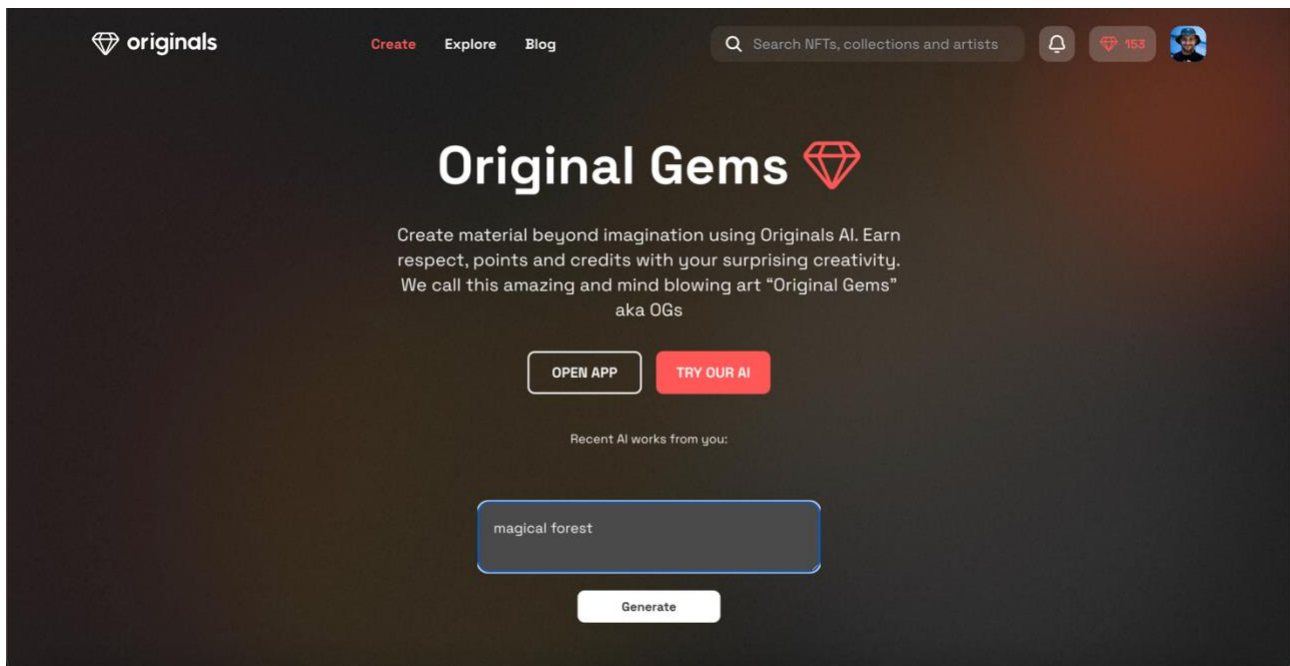


Figure 12 - Creating your artwork with Originals AI

The first step is to generate a picture of something you want to see, in this case I want a picture of a magical forest, so I wrote "magical forest" and pressed Generate.

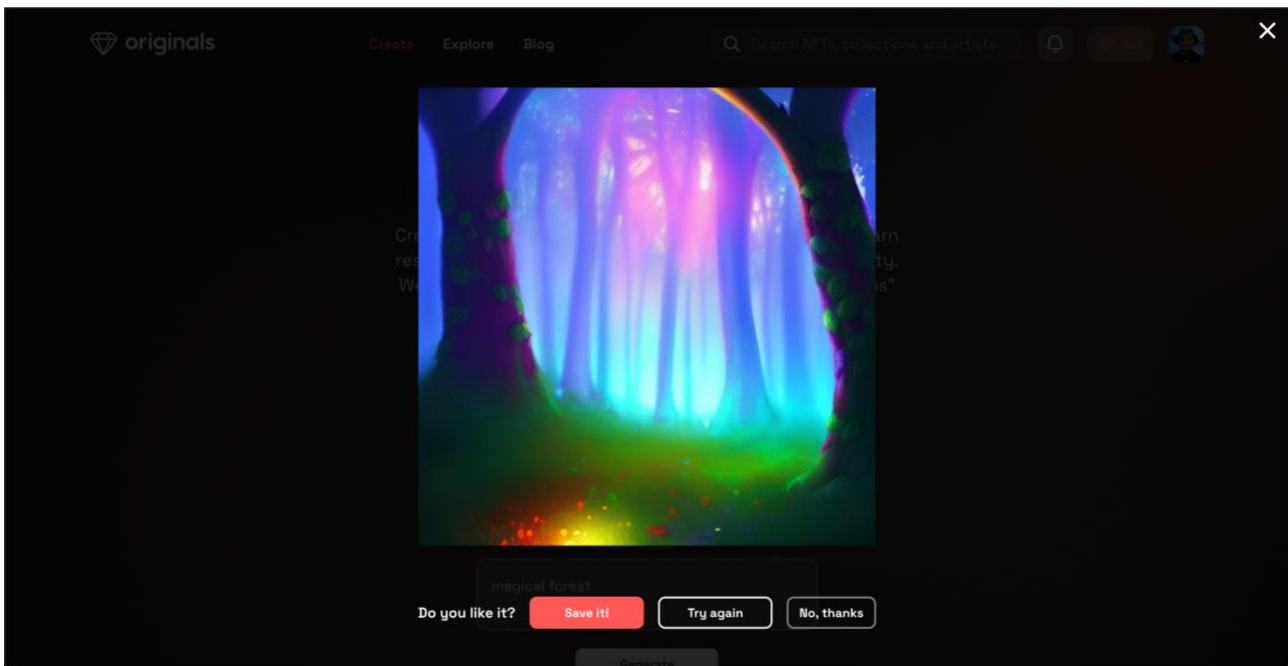


Figure 13 - AI Generated Picture

I love this picture, so I will save it immediately and change the name and description.

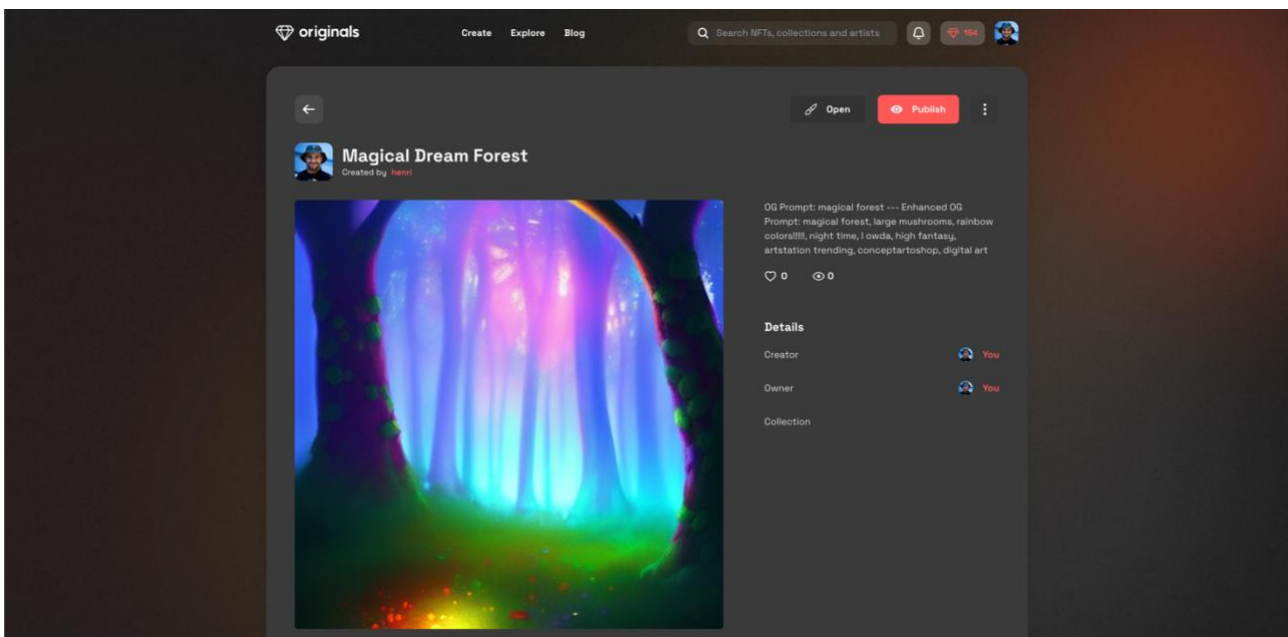


Figure 14 - Saved work in Originals



Next, I need to publish the work to create an NFT of it. I just click Publish and wait a bit before the Create NFT button appears.

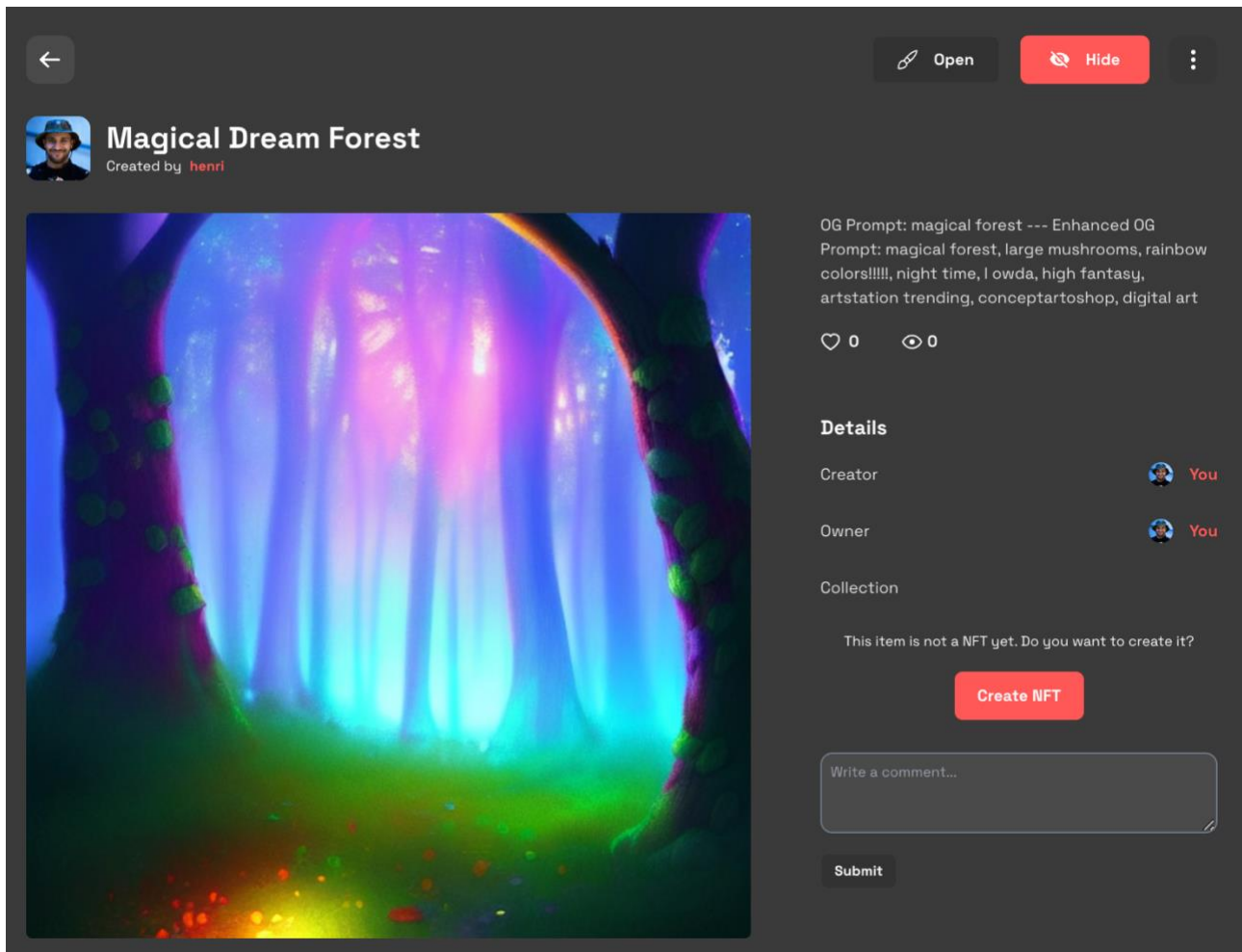


Figure 15 - Create NFT Button appeared

Next, I click the Create NFT button, choose a price and click “Create”, which then creates a NFT on the Polygon mainnet and mints the NFT.

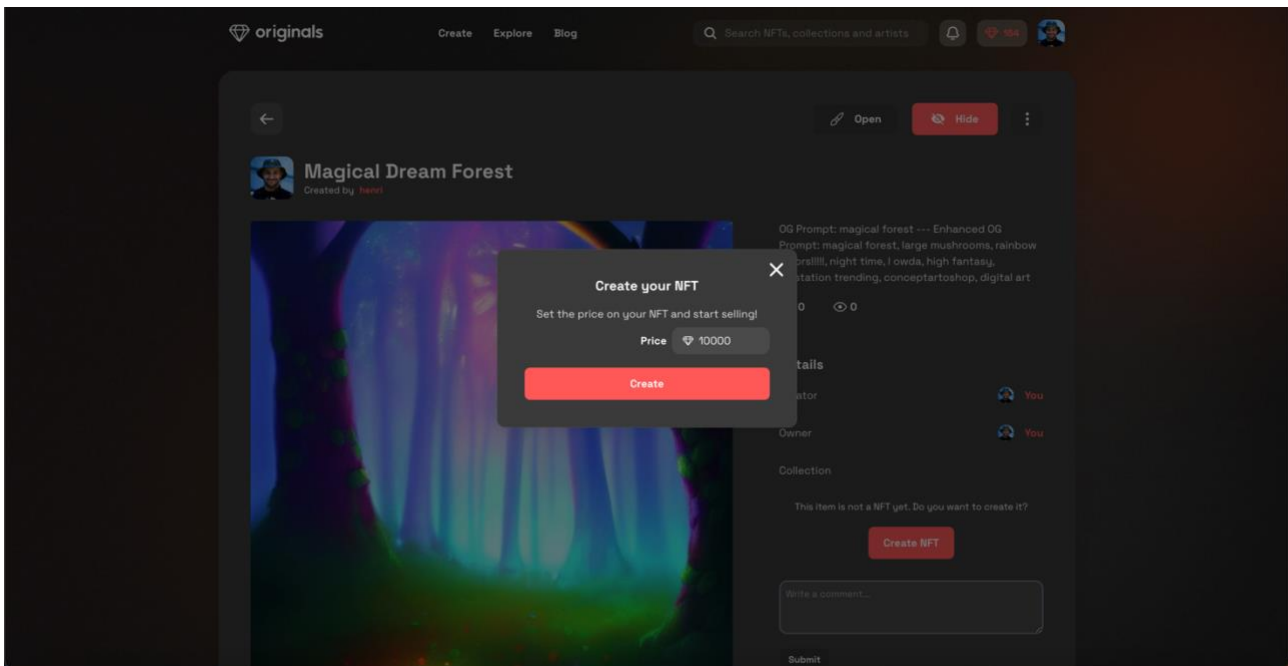


Figure 16 - NFT Creation Modal

## 9 Interviews

I interviewed Meeri Koutaniemi and Sami Yaffa after they tried the Originals platform to get their feedback on the platform we created. These are interviews with really limited usage experience of the platform, and are meant to see how they see the platform after a first glance.

### 9.1 Meeri Koutaniemi

Meeri Koutaniemi is a Finnish Photographer. Meeri is especially known from her photo reportages and portraits dealing with human rights, minorities, and empowerment. (Wikipedia)

Meeri has won several awards, including Portrait of the year, Magazine picture of the year, Magazine photographer of the year, Foreign reportage of the year, Multimedia of the year and several others.

The interview with Meeri was done on 20<sup>th</sup> of November 2022 at Kuusamo in person.

How did the process of creating art with the Origina.ls platform feel?

*It feels easy, tempting, surprising and something completely new.*

Was it easy to mint an NFT from your art?

*Yes! It was just one click away.*

Did you feel like this was addictive and wanted to create another right after your first one?

*Yes, because you never know if the next one is better and you want to regenerate either the words you used or change it completely and see where it takes you.*

How do you feel about the possibility of selling your art on the platform?

*Sounds almost too good to be true, so absolutely worth trying.*

Do you feel like this platform encourages users to become artists?

*Absolutely.*

## **9.2 Sami Yaffa**

Sami Yaffa (Sami Takamäki) is an artist with a long history in the music business with bands like Hanoi Rocks, New York Dolls, Michael Monroe band and others. Sami has also created a TV show called Sami Yaffa – Soundtracker where he traveled the world and introduced himself and the viewers to different cultures and their music styles. He has also written his biographical book “Tie Taipuu” in 2016 and created a comic book called “Punkin seikkailut – Taistelu Plastimiestä vastaan” in 2020 for which he drew comics for. I interviewed Sami after a brief test of the Origina.ls platform, where he tested the AI tool to generate an image and created an NFT of it.

The interview with Sami was done on 20<sup>th</sup> of November 2022 at Kuusamo in person.

How did the process of creating art with the Origina.ls platform feel?

*Mindboggling and exciting because of the way that you can use words to create an image in your mind. But the result is even more far out than your mind.*

Was it easy to mint an NFT from your art?

*Very super easy.*

Did you feel like this was addictive and wanted to create another right after your first one?

*I think it's highly dangerously addictive for a visual person like me, and I end up in originals hole for hours on end.*

How do you feel about the possibility of selling your art on the platform?

*I feel very excited about it. I hope that a lot of people will find this platform because I think it's a groundbreaking new platform to create visuals.*

Do you feel like this platform encourages users to become artists?

*Definitely, because arts in itself is a forever changing form. The art world has never been stagnant and needs to transform by any means necessary.*

### **9.3 Conclusion**

Both Meeri and Sami felt that the platform is easy to use, addictive and interesting, which is exactly what we were aiming for with Origina.ls. It's hard to describe the excitement I witnessed in person, but as the creator of the Originals AI, I was really happy that they felt excited. Meeri and Sami also felt enthusiastic about selling their art on the platform, which is a very important factor for the sustainability of the Origina.ls platform in the future.

## 10 My thoughts

I felt that this thesis was a success for Sumo and Origina.ls as well. When I started, Origina.ls didn't exist at all, so this platform has been built and launched while this thesis has been under development. Now, we need marketing material and I think this thesis will also bring some marketing benefits to both Sumo and Origina.ls. Biggest achievement for me was developing the AI feature for the Origina.ls platform, and I will keep developing it further after finishing this. This subject was quite difficult in some ways because NFTs are a new phenomenon and have differentiating articles about them. I saw this as an opportunity to write this thesis as I have interpreted NFTs and the blockchain while researching for this thesis. I have no regrets though, as I find this kind of stuff interesting and the launch of the Origina.ls platform was timed perfectly.

## References

Write the list of references here.

Fuchs, A. (2022, February 10). *NFTs and Copyright Law*. Harness IP.

<https://www.idsupra.com/legalnews/nfts-and-copyright-law-7361836/>

Lucker, N. (2021, October 29). *What is the biggest NFT marketplace? A top 10 comparison*.

<https://www.blockdata.tech/blog/general/what-is-the-biggest-nft-marketplace-a-top-10-comparison>

Koistinen, T. (2021, March, 16). *NFT taide- ja -keräily: Mitä kaikkea on tarjolla? [NFT art and*

*collecting: What all there is to offer?]* Bitcoinkeskus. <https://bitcoinkeskus.com/nft-taide-keraily/>

Luettu: 8.10.2021

The Ascent Staff. (2022, March, 9) *Best NFT Wallets for 2022*. The Ascent.

<https://www.fool.com/the-ascent/cryptocurrency/best-nft-wallets/>

Clark, M. (2021, August, 18). *NFTs, explained* <https://www.theverge.com/22310188/nft-explainer-what-is-blockchain-crypto-art-faq>

Smee, S. (2021, December 18) *Will NFTs transform the art world? Are they even art?* The Washington Post. <https://www.washingtonpost.com/arts-entertainment/2021/12/18/nft-art-faq/>

ethereum.org. (n.d.). *Non-fungible tokens (NFT)*. Retrieved May 5, 2022, from <https://ethereum.org/en/nft/>

Wikipedia (2022) Meeri Koutaniemi. [https://fi.wikipedia.org/wiki/Meeri\\_Koutaniemi](https://fi.wikipedia.org/wiki/Meeri_Koutaniemi)

Nakamoto, S. (2008) Bitcoin: A Peer-to-Peer Electronic Cash System [https://www.ussc.gov/sites/default/files/pdf/training/annual-national-training-seminar/2018/Emerging\\_Tech\\_Bitcoin\\_Crypto.pdf](https://www.ussc.gov/sites/default/files/pdf/training/annual-national-training-seminar/2018/Emerging_Tech_Bitcoin_Crypto.pdf)

Dedezade, E (2021) 13 of the Biggest NFT Marketplaces <https://decrypt.co/80595/best-nft-marketplaces>

Raynor de Best, Statista (2022) <https://www.statista.com/statistics/1265353/nft-sales-val>

