



The Power Of Networks: Artificial Intelligence and Blockchain

Raffles Institution
Singapore, July 2022

Vignesh
Uli Hitzel



Agenda

- Artificial Intelligence (AI)
- Neural Networks & Machine Learning
- AI Engines you can use today
- Creating Art with AI
- → Your own artwork

- Blockchain and Web3.0
- Non-fungible Tokens (NFTs)
- Opportunities using NFTs
- Minting NFTs
- → Your own NFT

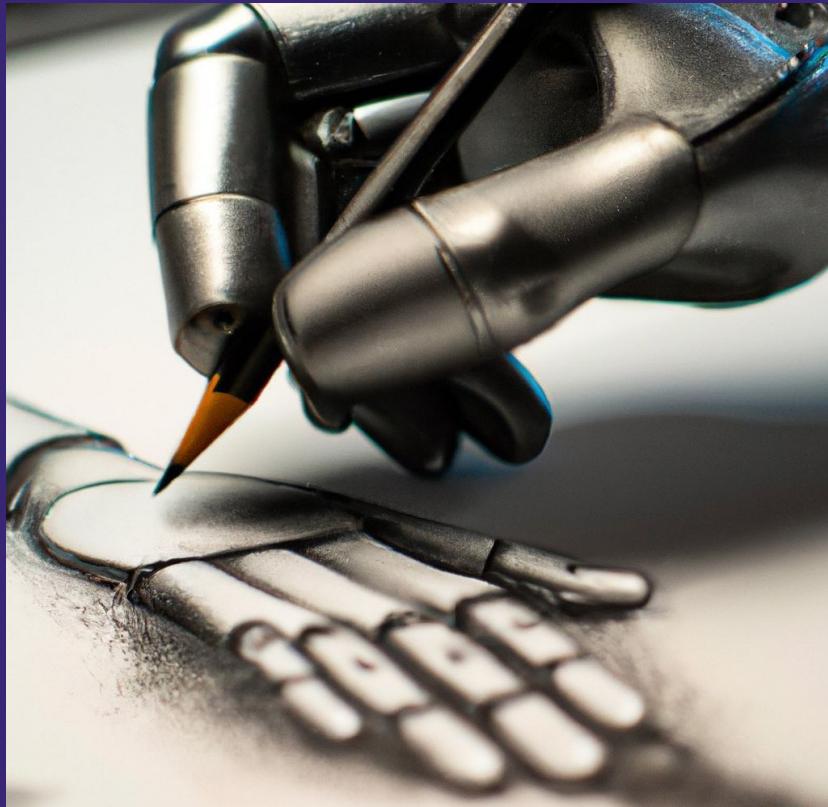


Uli



Vignesh

Part 1: Artificial Intelligence & Creating Art



Nothing you are about to see is real.



The following document contains:

- Photos that are not real photos
- Paintings that are not real paintings
- People and places that do not exist

All images in this slide deck were created by OpenAI's DALL-E 2 and Wombo.

School Campus: Re-architected with AI





**“Raffles
Institution,
campus as of
2065”**



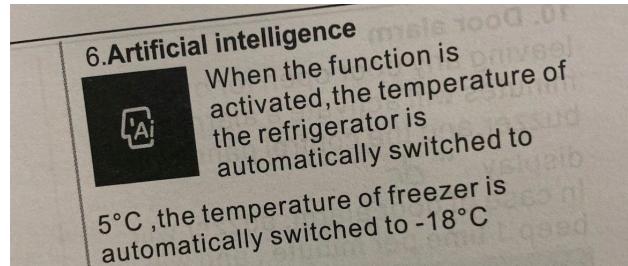
“I was the first knowledge worker whose job was threatened by a machine” Garry Kasparov



PHOTOGRAPH: STAN HONDA/GETTY IMAGES

Artificial Intelligence

- Intelligence Demonstrated by Machines
- AI vs Machine Learning
- AI Effect: the moment we understand how it works, we no longer think of it as “AI”





“Singapore in the
year 2065,
concept art”



“Marina Bay
Sands having
common ivy
growing all over
it”



“Police droids in
downtown
Singapore”



“A couch in the
shape of a
durian”



“An ancient
Etruscan vase
with the Coca
Cola logo on it”



“Wall painting of an Egyptian tomb, showing people using smartphones”



“Hands of a
scientist,
showing the
remains of a
dragon skull”

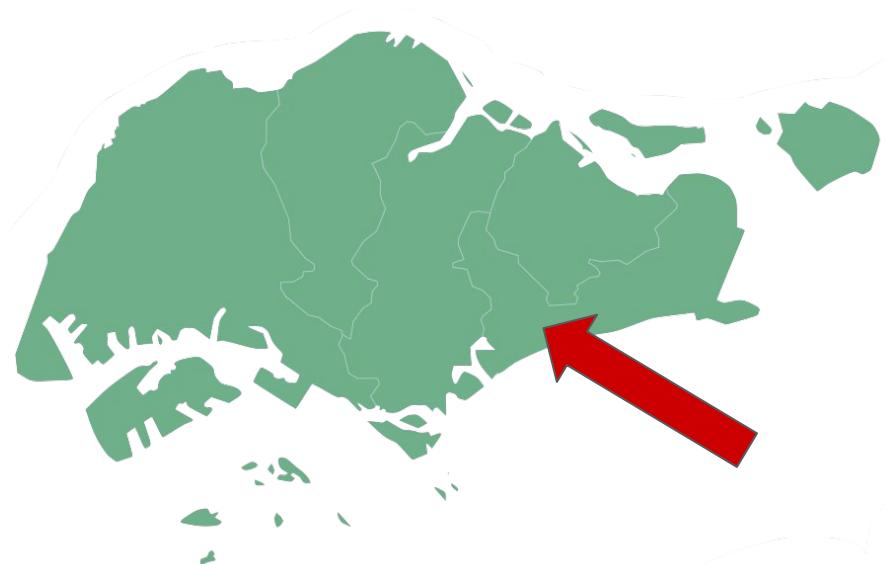


“A Japanese girl
smiling at a
muppet,
close-up
portrait.”

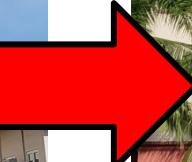


**“Surreal painting
of horses racing
down a beach”**

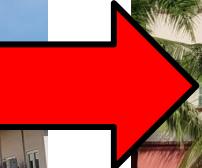
This is where I live



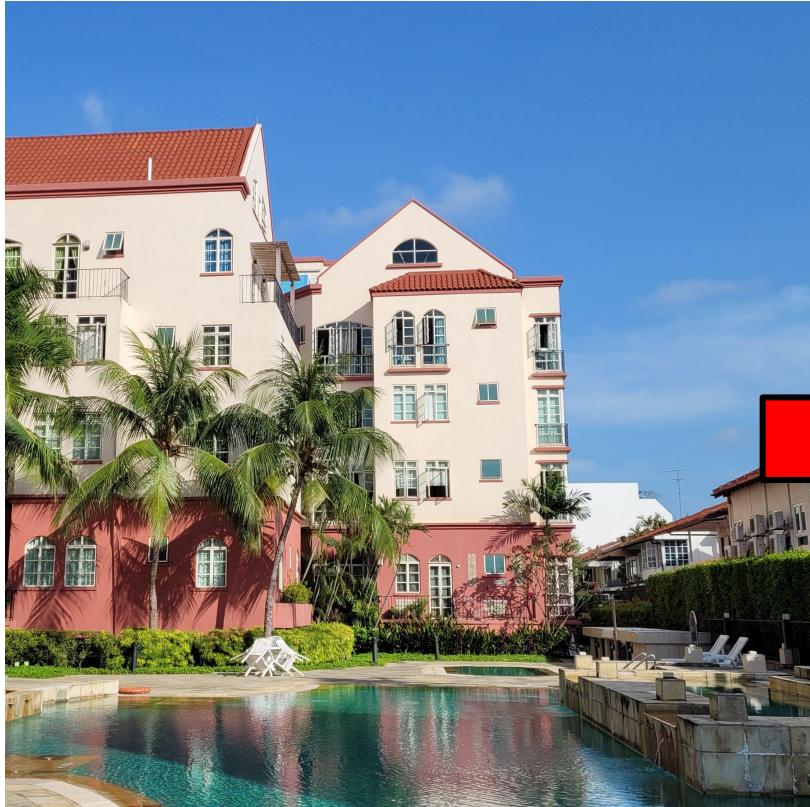
The Pool Could Be Nicer



Let's Have A Park Instead!



.... Or A Sports Car!



DALL·E 2 can create original, realistic images and art from a text description. It can combine concepts, attributes, and styles.

TEXT DESCRIPTION

An astronaut Teddy bears A bowl of
soup

that is a portal to another
dimension that looks like a
monster as a planet in the universe

knitted out of wool spray-painted on
a wall made out of plasticine





OpenAI: GPT-3

- “Generative Pretrained Transformer” version 3
- Neural network, leverages deep learning to generate human-like text -> it ‘just’ predicts text
- OpenAI research company: Elon Musk, Reid Hoffman, Sam Altman
- 175 billion trainable parameters, it ‘read’ 45TB of books, Wikipedia, and the internet

[Overview](#)[Documentation](#)[Examples](#)[Playground](#)[Save](#)[View code](#)[Share](#)

...



Prompt

Explain the concept of artificial intelligence and machine learning to a non-technical person in a few sentences.

Artificial intelligence and machine learning are the study and practice of making machines and computer programs that can perform tasks that normally require human intelligence. Machine learning is a subset of artificial intelligence in which computer programs are trained to make predictions from data without being explicitly programmed.

What are the benefits and concerns of artificial intelligence and machine learning?

The benefits of artificial intelligence and machine learning are that they can perform tasks more efficiently and accurately than humans. The downsides are that they may be biased and not able to make decisions that a human could make.

[Generate](#)

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Huxley

OpenAI Bot based
on GPT-3



Telegram

Huxley bot

Joe Chip I'm keen to get started listening to Bach. Do you have any advice where to start? 10:34 PM

Huxley Do you have any particular piece in mind? 10:34 PM

Joe Chip no, not at all 10:34 PM

Huxley Okay, well I would suggest you start with his Brandenburg concertos. 10:34 PM

Joe Chip interesting... why do you suggest this one 10:34 PM

Huxley Because it is a good introduction into Bach's music. It is a series of 6 concertos that are quite different from each other and will give you a good overview of his music. 10:34 PM

Joe Chip I am told his music is super complex 10:35 PM

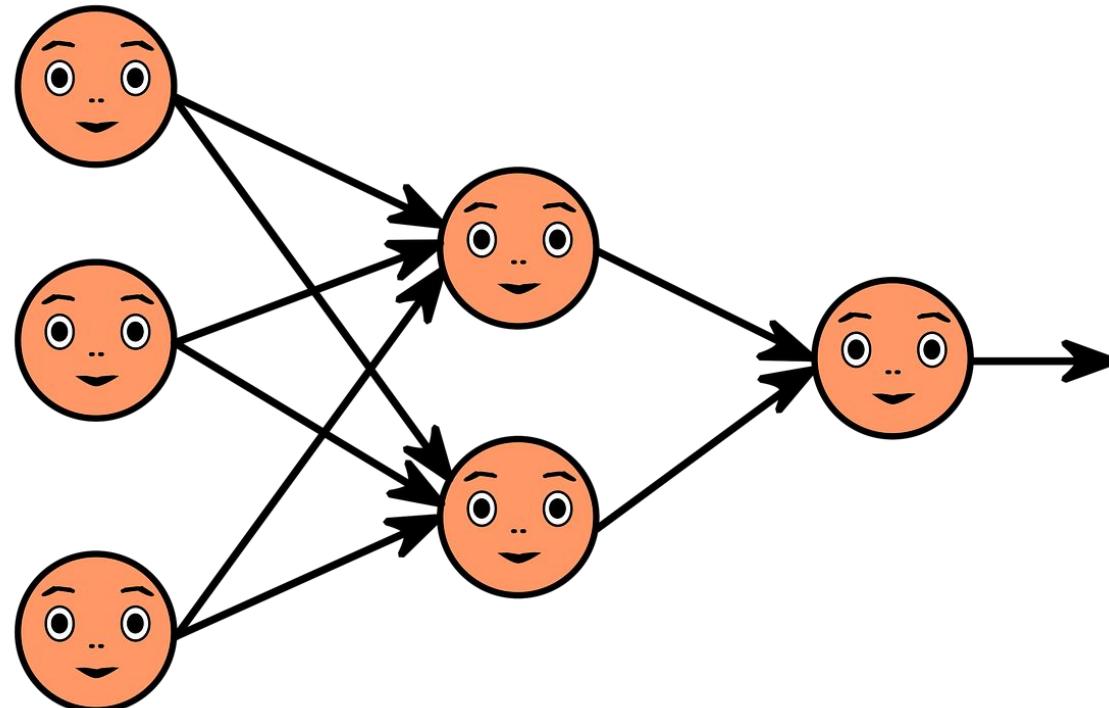
Huxley That is true, but the Brandenburg concertos are very accessible for anyone. 10:35 PM

Joe Chip this is a secular piece, right? What if prefer to 10:35 PM

Write a message...

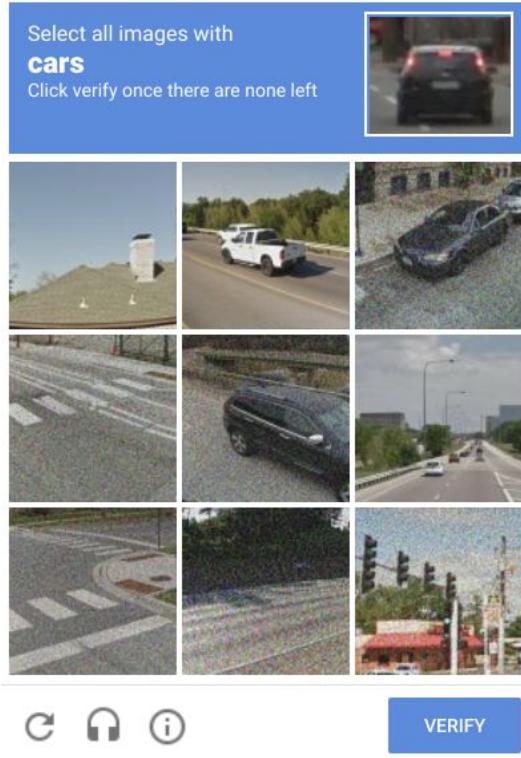
A screenshot of a Telegram conversation with a bot named "Huxley". The bot is identified as a "bot". The user, "Joe Chip", asks for advice on where to start listening to Bach. The bot suggests starting with the Brandenburg concertos, describing them as a good introduction due to their variety and accessibility. The user, "Joe Chip", notes that Bach's music is complex, but the bot clarifies that the Brandenburg concertos are very accessible. The user then asks if they are secular pieces, to which the bot responds with a placeholder message "this is a secular piece, right? What if prefer to". The interface includes standard Telegram elements like a search bar and a message input field.

Artificial Neural Networks

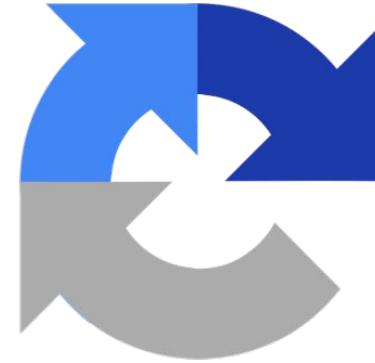


Training The Network

Select all images with
cars
Click verify once there are none left



VERIFY

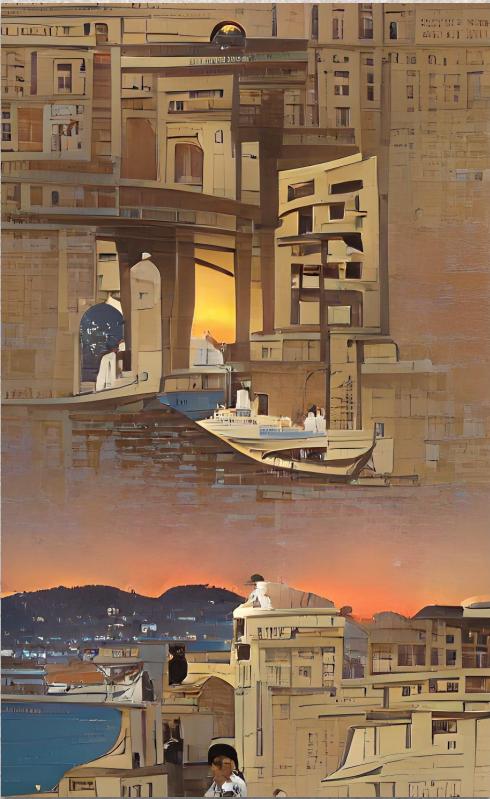


reCAPTCHA

PICTURES OF THE FLOATING OF THE WORLD

An Art Collaboration Between Human and AI

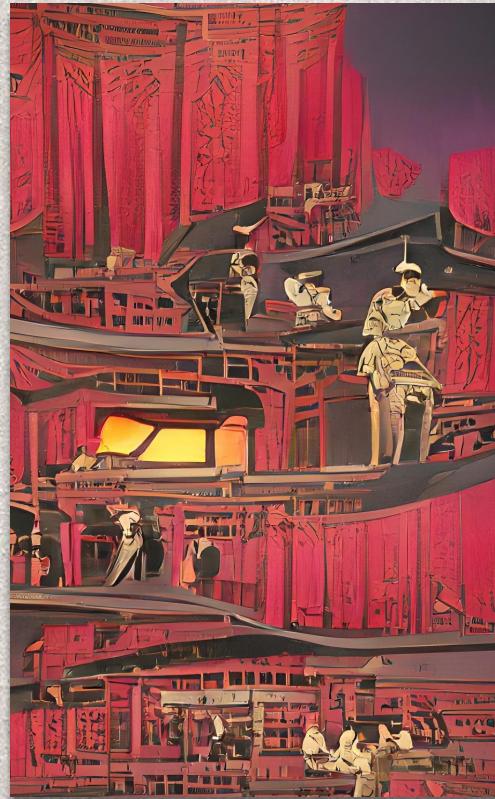
<https://apigeek.net/art>



Italy



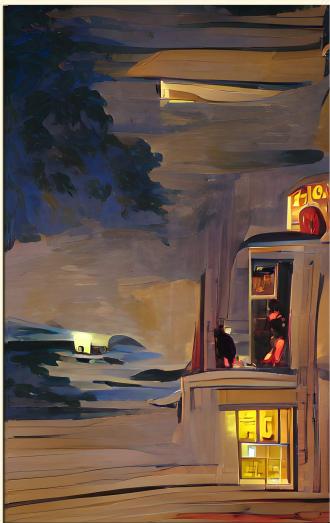
After Work



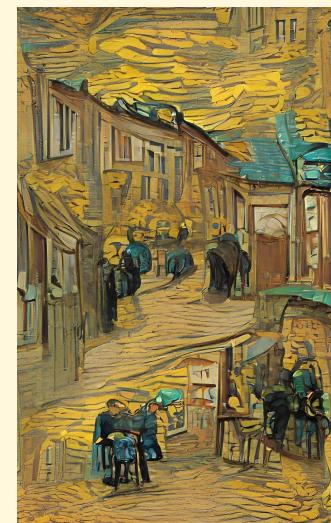
Night at the Opera



Claude Monet (b. 1840)
The Lake, 2021



Edward Hopper (b. 1936)
The Storm, 2021



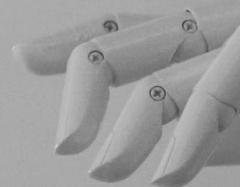
Vincent van Gogh (b. 1853)
Street Life, 2021



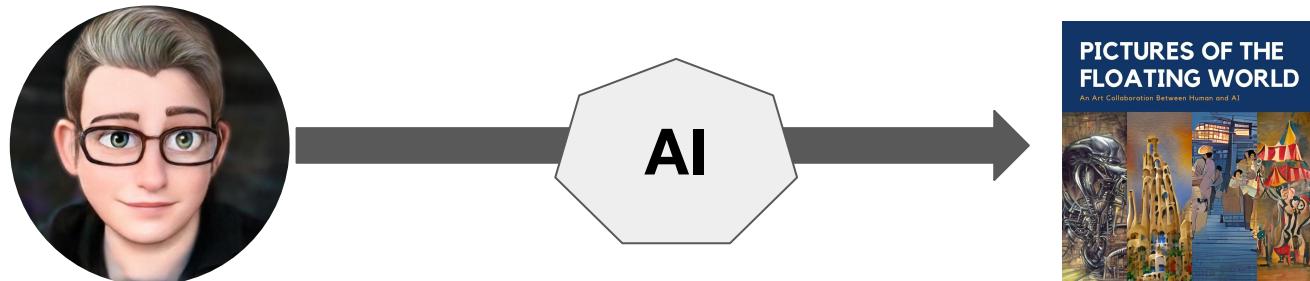
The New World – Retro-Futuristic Art

How?

- Use AI to translate text descriptions (“prompts”) into images
- Use another AI to create those prompts
- Collaborate with a hyper-intelligent artificial person to come up with ideas



“Performance Enhancement Drugs”

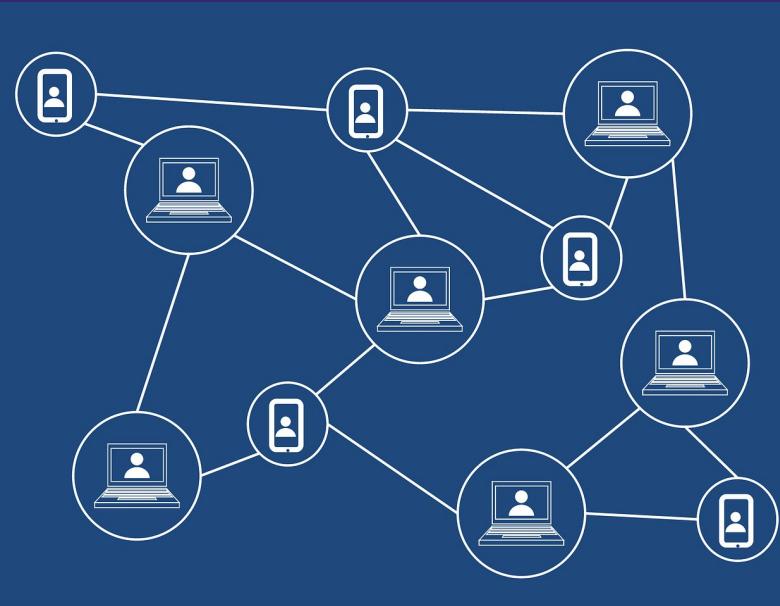


Creating Art From Text

<https://app.wombo.art>

The screenshot shows the Wombo app interface. At the top, there is a prompt entry field containing "Never ending flower". Below it, a row of four buttons shows recent prompts: "Sunset cliffs", "Never ending flower" (which is highlighted), "Fire and water", and "DNA tornado". The next section is titled "Art Style" and displays eight thumbnail images representing different styles: Dark Fantasy, Psychic, Pastel, HD, Vibrant, Fantasy Art, Steampunk, and Ukiyoe. A large "Create" button at the bottom is highlighted with a red border. To the right of the interface is a generated artwork featuring a fantastical landscape with floating islands, colorful flowers, and a small figure.

Part 2: NFTs and Blockchain



Part 2 - Roadmap

NFTs -> Opportunities -> Blockchain Technology -> Mint your own NFT

What is an NFT?

Why NFTs?

What is an NFT?

Non-fungibility: Unique + Cannot be Replaced

Think - Limited Edition but authenticatable.

Similar to associating an NRIC with a digital asset such as art



Why NFTs?



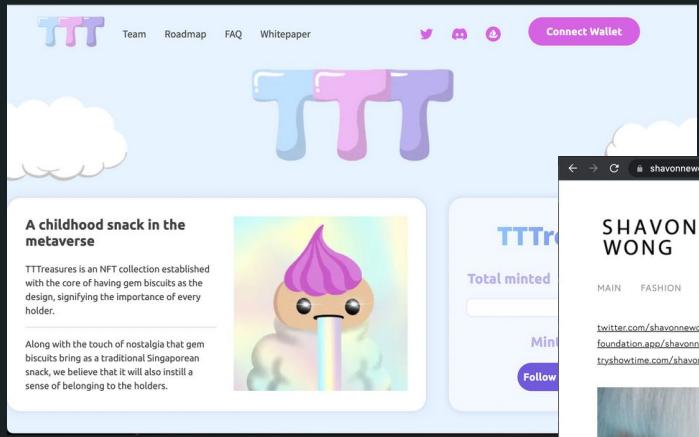
Interact in the
metaverse



Profit



Develop the
Future

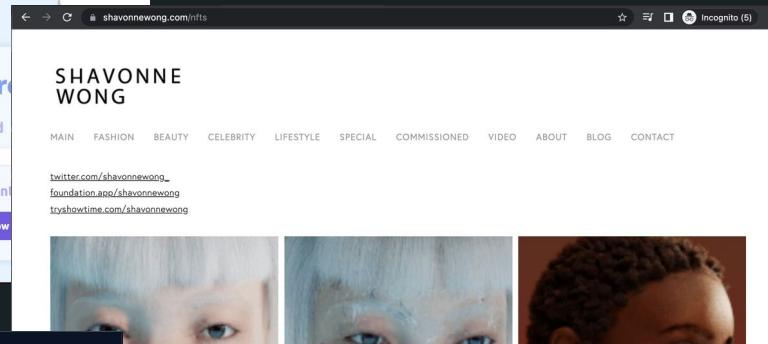


The TTTreasures website features a large, colorful logo at the top. Below it is a section titled "A childhood snack in the metaverse" with a text description and an image of a gem biscuit character. A sidebar on the right shows a progress bar for "Total minted" and a "Follow" button.

A childhood snack in the metaverse

TTTreasures is an NFT collection established with the core of having gem biscuits as the design, signifying the importance of every holder.

Along with the touch of nostalgia that gem biscuits bring as a traditional Singaporean snack, we believe that it will also instill a sense of belonging to the holders.

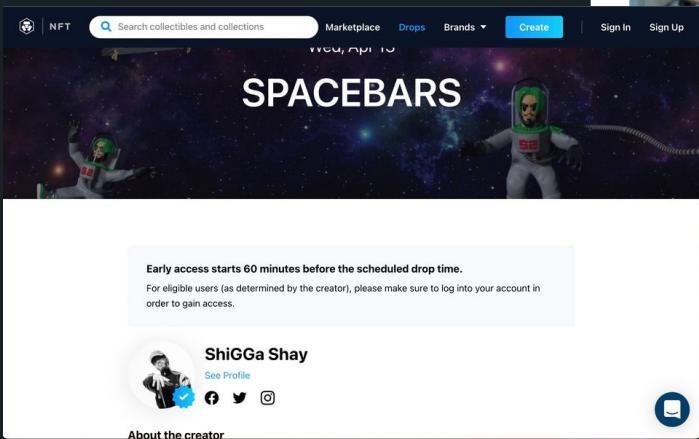


The Shavonne Wong website has a clean, modern design with a white header featuring her name. Below the header is a navigation menu with links to Main, Fashion, Beauty, Celebrity, Lifestyle, Special, Commissioned, Video, About, Blog, and Contact. The main content area displays three images of a woman with pale skin and blue hair.

SHAVONNE WONG

MAIN FASHION BEAUTY CELEBRITY LIFESTYLE SPECIAL COMMISSIONED VIDEO ABOUT BLOG CONTACT

twitter.com/shavonne_wong_ foundation.ape/shavonne_wong tryshowtime.com/shavonne_wong



The Spacebars website has a dark, space-themed background. It features a banner for a drop on April 15th and a section for early access starting 60 minutes before the scheduled drop time. Below this is a creator profile for ShiGGa Shay with a bio and social media links. A footer at the bottom includes a "About the creator" link.

SPACEBARS

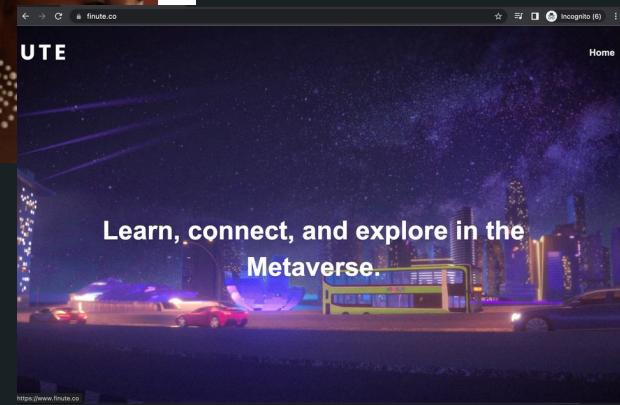
Wednesday, April 15

Early access starts 60 minutes before the scheduled drop time.

For eligible users (as determined by the creator), please make sure to log into your account in order to gain access.

ShiGGa Shay
[See Profile](#)

About the creator



The Finute website has a futuristic, neon-lit cityscape background. The main headline reads "Learn, connect, and explore in the Metaverse." Below the headline is a call-to-action button labeled "GET INVITED". At the bottom, there is a link to the website: <https://www.finute.co>.

UTE

Learn, connect, and explore in the Metaverse.

<https://www.finute.co>

Opportunities

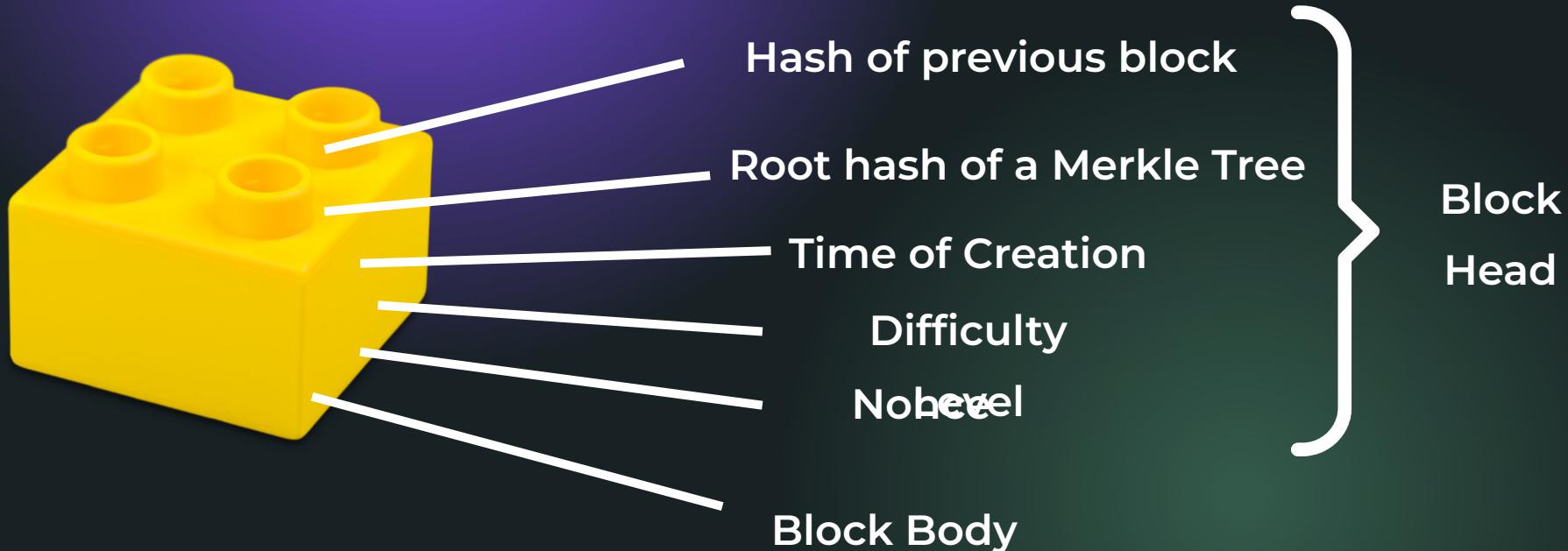


Unlock content
creation

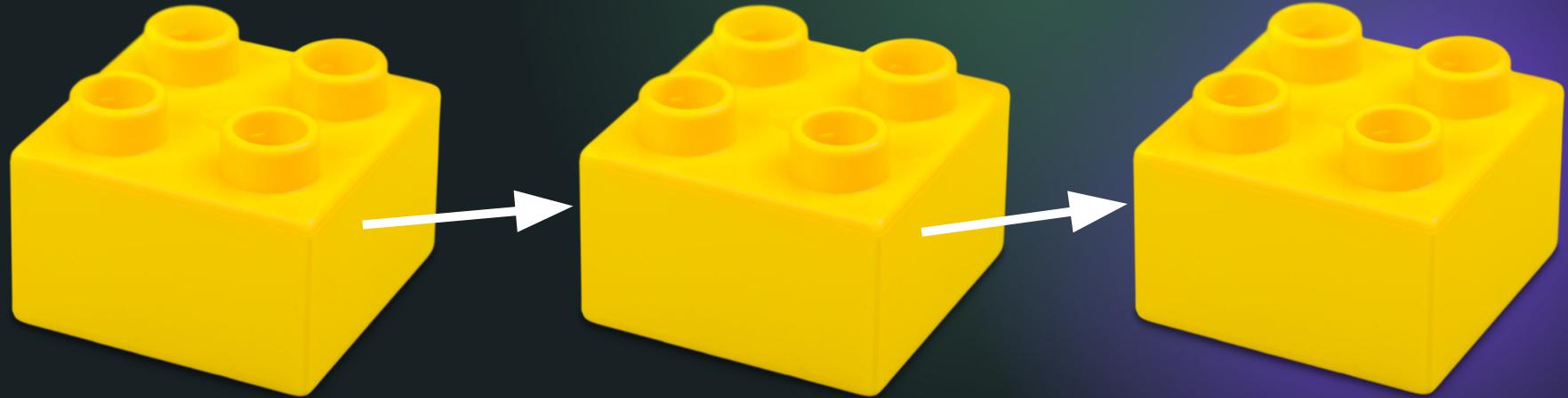
Reimagine real
estate

Supply chain
management

Anatomy of a block



Blockchain



Data cannot be changed!
(Immutability)

Web 3.0



Web 1.0



Web 2.0



Web 3.0?

You Will Need

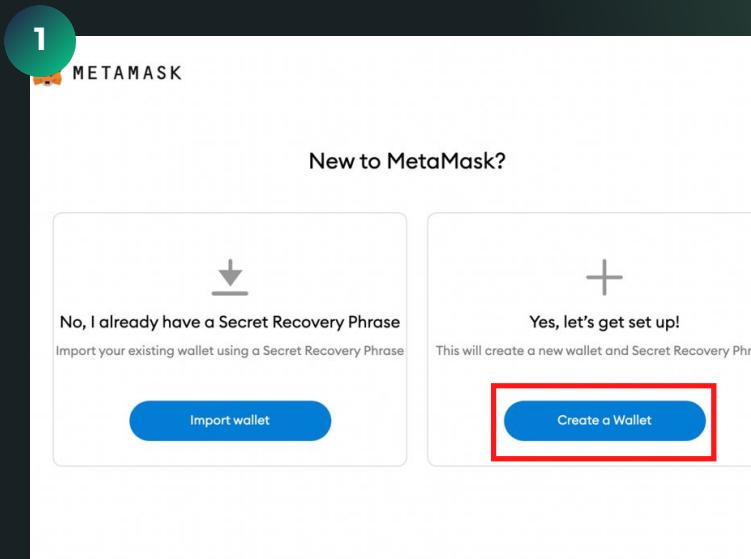


**MetaMask Wallet,
Chrome Extension
and Mobile
Application**

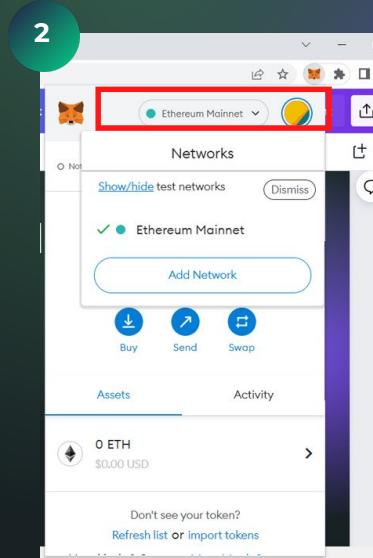


**Computer and
Smartphone**

Setting up Metamask



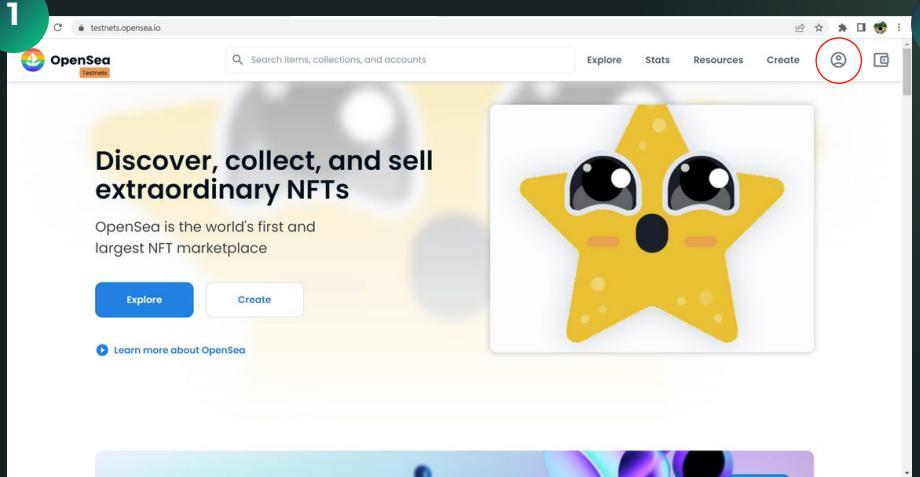
Create a MetaMask wallet



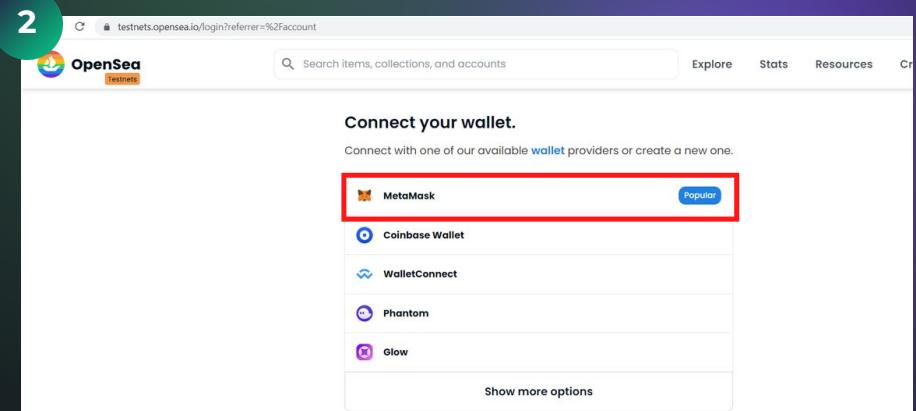
Ensure that you are on Ethereum
Mainnet

Login to OpenSea

1



2

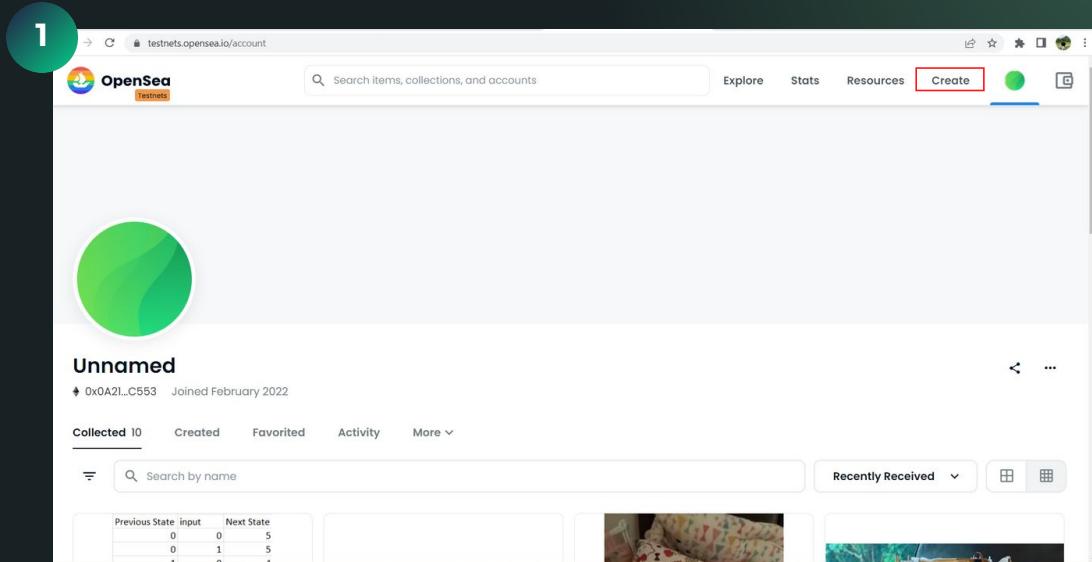


Head to opensea.io

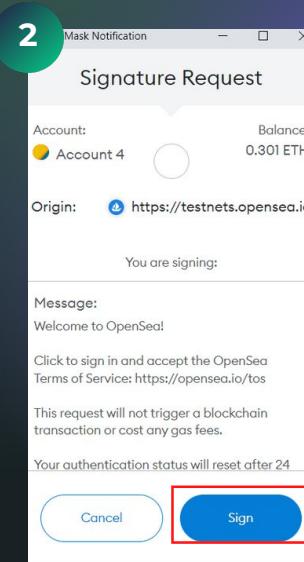
Select the user icon

Select MetaMask Wallet

Create your first NFT



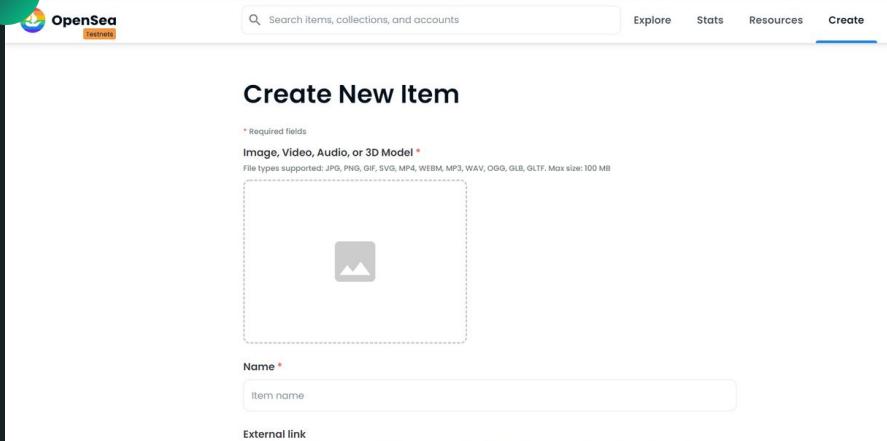
Head to opensea.io
Select the user icon



Authorise use of account

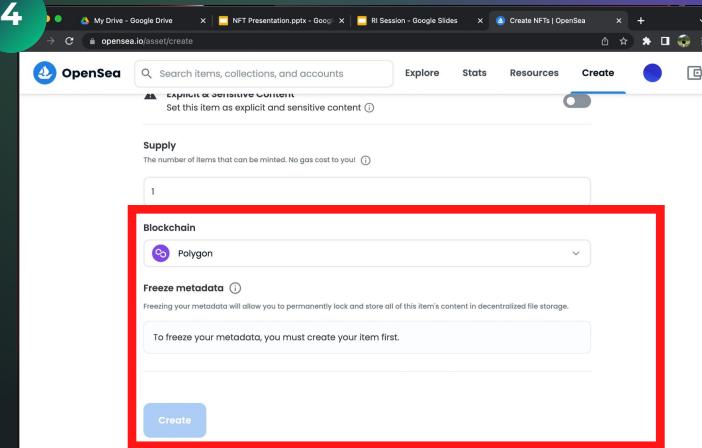
Create your first NFT

3



The screenshot shows the OpenSea website's 'Create' section. At the top, there are tabs for 'Explore', 'Stats', 'Resources', and 'Create'. A search bar is at the top left. Below it, the heading 'Create New Item' is displayed. A note says 'Required fields' and 'Image, Video, Audio, or 3D Model *'. It specifies supported file types: JPG, PNG, GIF, SVG, MP4, WEBM, MP3, WAV, OGG, GLB, GLTF, with a max size of 100 MB. There is a large dashed rectangular area for uploading an image, which contains a small mountain icon. Below this is a 'Name *' field with the placeholder 'Item name' and an 'External link' field.

4

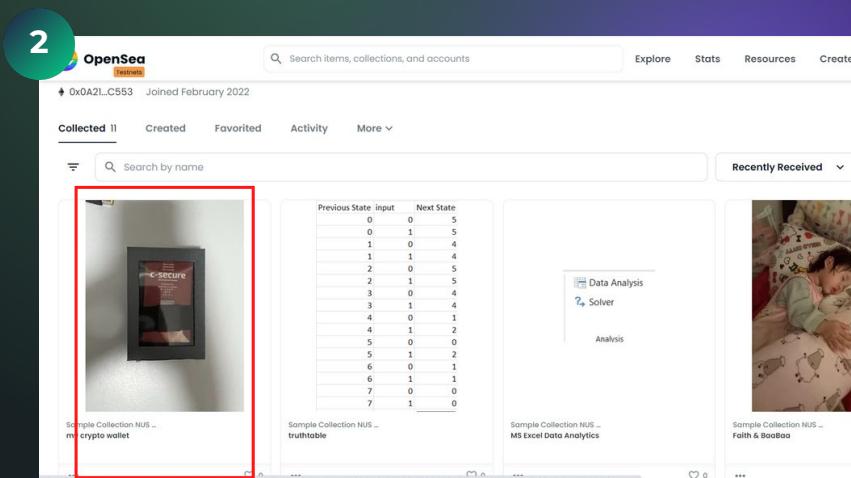
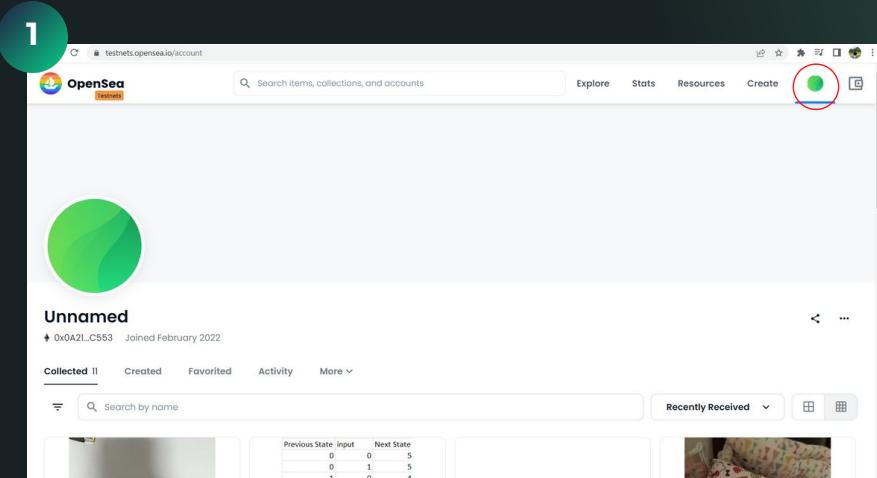


The screenshot shows the 'Create' section of the OpenSea website. At the top, there are tabs for 'Explore', 'Stats', 'Resources', and 'Create'. A search bar is at the top left. A note says 'EXPLICIT OR SENSITIVE CONTENT' with a toggle switch. Below it, the heading 'Supply' is displayed. A note says 'The number of items that can be minted. No gas cost to you!' with a dropdown menu set to '1'. A red box highlights a dropdown menu labeled 'Blockchain' with 'Polygon' selected. Below it, a note says 'Freeze metadata' with a note: 'Freezing your metadata will allow you to permanently lock and store all of this item's content in decentralized file storage.' A note below says 'To freeze your metadata, you must create your item first.' At the bottom is a blue 'Create' button.

Fill in the details,
Upload an artwork of your choice

Select the Polygon blockchain and
Create your NFT!

MINT YOUR NFT

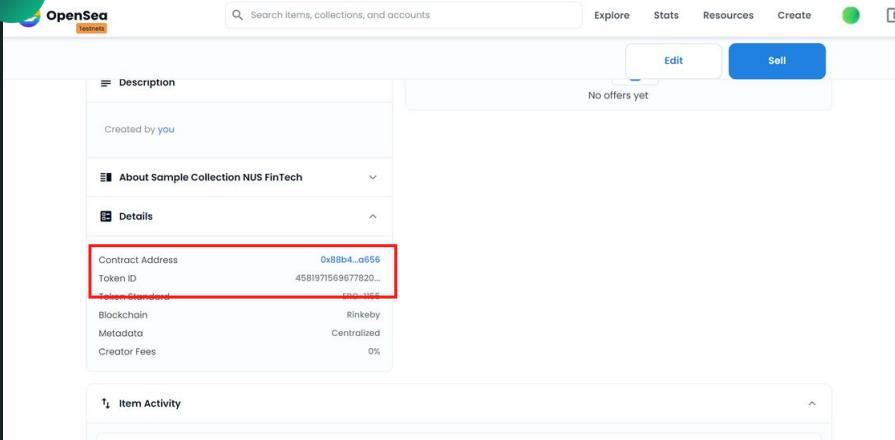


Select User to view created NFTs

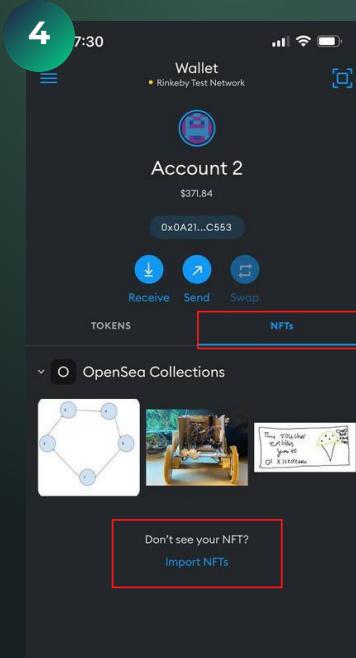
Select the NFT you just created

MINT YOUR NFT

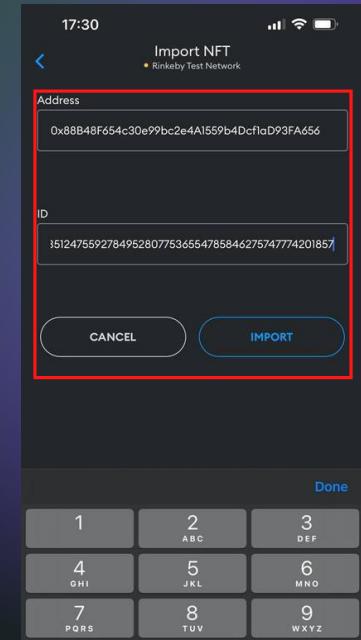
3



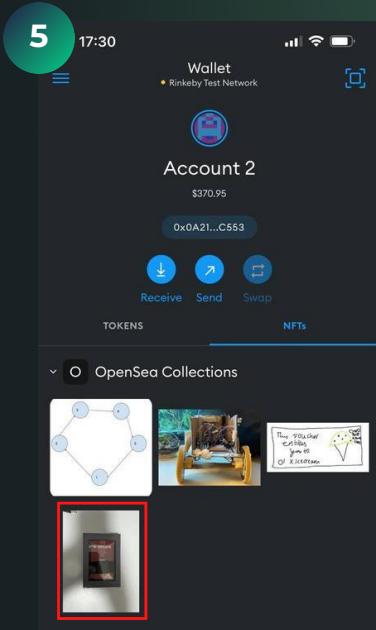
Navigate to the Details Section,
Copy Contract Address and Token ID



On your smartphone's Metamask App:
Navigate to NFTs. Select Import NFTs.
Enter the Contract Address and Token ID



MINT YOUR NFT



Enjoy your newly minted
NFT!