STUDY MATERIAL OF CLASS 6

1. ARTIFICIAL INTELLIGENCE

What is AI?

AI, or **Artificial Intelligence**, is when computers and machines try to **think and act like humans**. For example, when you talk to Alexa or Siri and they answer your questions—that's AI! It helps robots, games, and apps learn and get smarter over time.

Here is a simple table presenting key aspects of **Artificial Intelligence (AI):**

Aspect	Description
Definition	The simulation of human intelligence in machines programmed to think and learn.
Types of AI	Narrow AI (task-specific), General AI (human-like), and Superintelligent AI.
Key Components	Machine Learning, Deep Learning, Natural Language Processing, Computer Vision.
Applications	Healthcare, Finance, Education, Transportation, Robotics, Cybersecurity, etc.
Learning Methods	Supervised Learning, Unsupervised Learning, Reinforcement Learning.
Challenges	Bias in data, lack of explainability, data privacy concerns, high computation cost.
Popular Tools/Frameworks	TensorFlow, PyTorch, Scikit-learn, OpenAI, Keras.
Impact on Society	Improves efficiency and automation, but also raises ethical and employment concerns.

What is the Relation Between AI, ML, and DL?

- **Artificial Intelligence (AI)** is the big idea—teaching machines to be smart.
- **Machine Learning (ML)** is a part of AI that helps machines **learn from experience**, just like we learn from our mistakes.
- **Deep Learning (DL)** is like the brain of the machine—it helps it do really hard tasks like recognizing faces or reading handwriting.

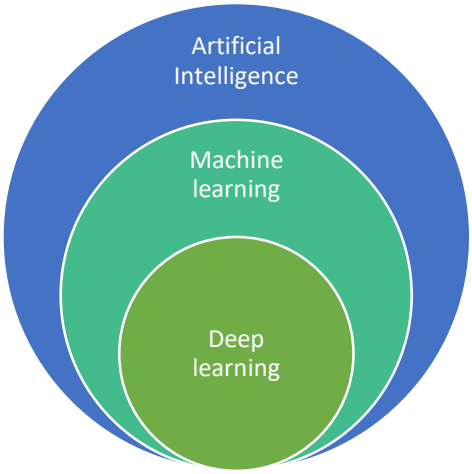

Fig 1 Relation between AI/ML/DL

Here is a comparative table presenting the differences and relationships between **AI (Artificial Intelligence)**, **ML (Machine Learning)**, and **DL (Deep Learning)**:

Aspect	AI (Artificial Intelligence)	ML (Machine Learning)	DL (Deep Learning)
Definition	Simulation of human intelligence in machines	Subset of AI that enables machines to learn from data	Subset of ML that uses neural networks with multiple layers
Goal	Build intelligent systems that can perform tasks like humans	Enable systems to learn and improve from experience	Mimic the human brain to solve complex problems automatically
Key Techniques	Reasoning, learning, problem-solving, perception, language processing	Regression, classification, clustering, decision trees	Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN)
Data Dependency	Can work with structured logic and rules	Requires structured data	Works well with large volumes of unstructured data

Aspect	AI (Artificial Intelligence)	ML (Machine Learning)	DL (Deep Learning)
Example Applications	Chatbots, robotics, expert systems, game AI	Spam detection, recommendation systems, fraud detection	Image recognition, speech recognition, natural language translation
Complexity	High-level intelligence systems	Moderate complexity, less computation-heavy	Very high complexity and computational power
Human Intervention	Can include pre-programmed rules	Requires feature extraction by humans	Learns features automatically, minimal human intervention

Here is a **detailed hierarchical structure** of **AI → ML → DL**, including **Supervised** and **Unsupervised Learning**:

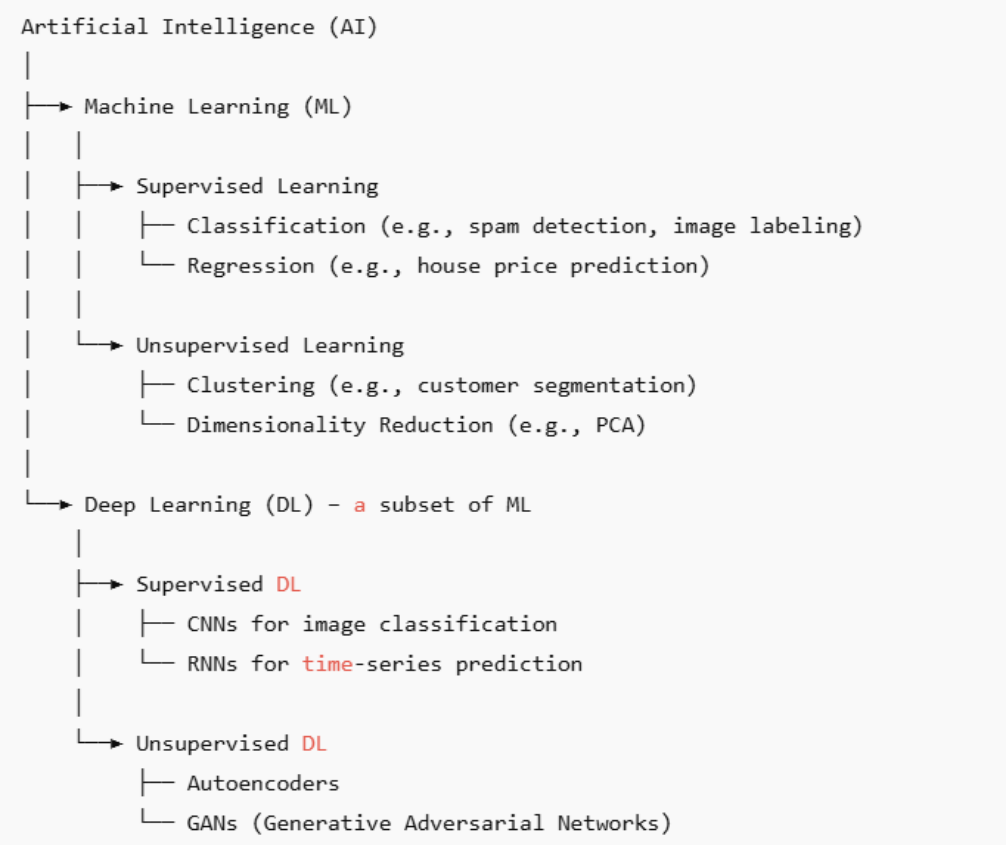

Fig 2 Hierarchical structure **of** AI → ML → DL

2. BLOCKCHAIN

What is Blockchain?

Blockchain is like a **digital notebook** that is shared with many people, and no one can erase or change what's written without everyone's permission. It keeps everything safe and honest. People use it to save money, share files, or track things online.

Key Terms in Blockchain:

- **Block:** A page in the digital notebook.
- **Chain:** The blocks are linked together like a chain.
- **Node:** The computers that keep the notebook safe.
- **Smart Contract:** Like a robot rule that runs by itself.
- **Hashing:** A secret code that keeps data safe.

Fig 3 Key term in Block Chain

Block

In block chain, a **block** is a container that holds a collection of data, typically including:

1. **Transaction data** – records of transactions (e.g., who sent what to whom).
2. **Timestamp** – the date and time the block was created.
3. **Previous block's hash** – a reference to the hash of the prior block, ensuring linkage.
4. **Current block's hash** – a unique identifier generated by hashing the block's contents.
5. **Nonce** – a number used in the mining process to validate the block (in Proof-of-Work systems).

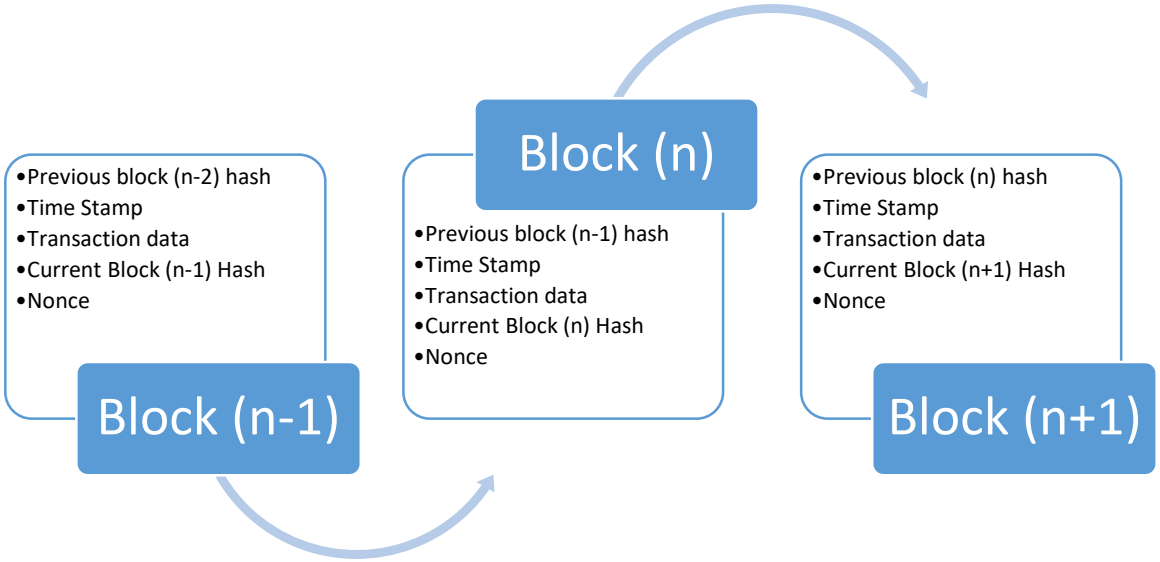

Fig 4 Interconnectivity of Blocks in Blockchain

Think of a block as a **page in a digital ledger**—once it is full, it is added to the chain and sealed, making its contents permanent and tamper-resistant.

Applications of Blockchain:

Blockchain helps with **online payments**, keeping medical records safe, voting safely online, and tracking where things come from—like your food or clothes.

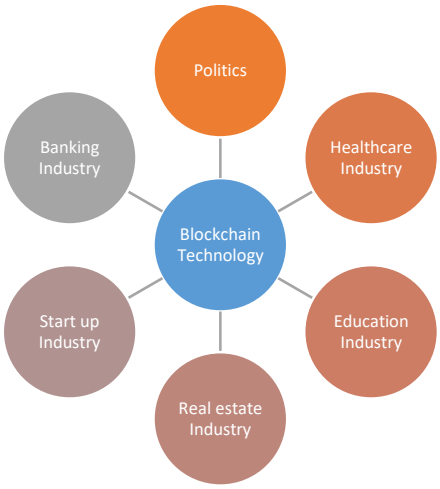

Fig 5 Application of Blockchain

What is DeFi (Decentralized Finance)?

DeFi means using **money online without banks**. People can send, save, or borrow money safely using apps on the blockchain.

What is CeFi (Centralized Finance)?

CeFi is like the **online version of your bank**, where a company or person manages your money. It still uses blockchain but has someone in charge.

Comparison between CeFi and DeFi

Here's a comparison table highlighting the key differences between **CeFi (Centralized Finance)** and **DeFi (Decentralized Finance)**:

Feature	CeFi (Centralized Finance)	DeFi (Decentralized Finance)
Control	Managed by centralized institutions	Operates without intermediaries (peer-to-peer)
Trust	Requires trust in the central authority	Trustless; relies on smart contracts and blockchain
Custody of Funds	Platform holds user funds	Users have full control of their funds (non-custodial)
Access	Requires registration/KYC	Open to anyone with a crypto wallet
Transparency	Limited; operations may not be fully visible	Fully transparent on the blockchain
Speed of Transactions	Generally slower due to intermediaries	Faster due to automation through smart contracts
Security	Prone to hacking of central entities	Protocol-level vulnerabilities (bugs in smart contracts)
Examples	Binance, Coinbase, Kraken	Uniswap, Aave, Compound
Innovation Speed	Slower due to regulation and legacy infrastructure	Rapid due to open-source collaboration
Regulation	Heavily regulated	Mostly unregulated or in early stages of regulation

3. WEB PROGRAMMING

Web programming (or web development) is the process of creating dynamic and interactive websites and web applications. It involves writing code that enables a website to perform specific functions, respond to user input, communicate with servers, and deliver content over the internet.

Here's a table presenting an overview of **Web Programming and Its Tools**:

Aspect	Description
Definition	Web programming involves writing code that enables websites and web applications to function interactively and dynamically.
Front-End Languages	HTML, CSS, JavaScript – used to build the structure, design, and interactivity of websites.
Back-End Languages	PHP, Python, Ruby, Java, Node.js – used for server-side operations and database interactions.
Databases	MySQL, PostgreSQL, MongoDB, SQLite – store and manage data used by web applications.
Web Frameworks	Django (Python), Laravel (PHP), Express (Node.js), Ruby on Rails – simplify back-end development.

What is HTML?

HTML is the **building block of websites**. It tells the computer what the webpage should look like—like where the text goes, where to put pictures, or what color the background should be. Here's a simple overview of the **basics of HTML (HyperText Markup Language)** — the standard language used to create web pages:

◆ 1. Basic Structure of an HTML Document

```
<!DOCTYPE html>
<html>
<head>
    <title>My First Web Page</title>
</head>
<body>
    <h1>Hello, World!</h1>
    <p>This is my first HTML page.</p>
</body>
</html>
```

Explanation:

- `<!DOCTYPE html>` – Declares the document type and version of HTML.
- `<html>` – Root element of the HTML document.
- `<head>` – Contains metadata (not shown on the page), like `<title>`, `<style>`, `<meta>`.

- `<title>` – Title of the web page (shown in browser tab).
- `<body>` – Contains the content displayed on the webpage.

◆ 2. Common HTML Tags

Tag	Description
<h1> to <h6>	Headings (h1 is biggest, h6 is smallest)
<p>	Paragraph
<a href="">	Hyperlink
<img src="" alt="">	Image
** , , **	Lists (unordered, ordered)
<table>, <tr>, <td>	Table elements
** **	Line break
<hr>	Horizontal line
** **	Division/container for content
****	Inline container

◆ 3. Example with Formatting

```
<h2>Welcome to My Page</h2>
<p>This is a <strong>bold</strong> word and this is <em>italic</em>.</p>
<a href="https://www.example.com">Visit Example</a>
<img src="image.jpg" alt="Sample Image" width="300">
```

◆ 4. Basic Table Example

```
<table border="1">
  <tr>
    <th>Name</th><th>Age</th>
  </tr>
  <tr>
    <td>John</td><td>30</td>
  </tr>
</table>
```

4. CORE ECOSYSTEM

What is Core Chain?

Core Chain is a **special blockchain** that is fast and easy to use. People use it to build apps, send money, and do things safely online without needing a middleman.

Fig 6 Icon of Core Blockchain

Here is the **features of Core Blockchain** presented in table format:

Feature	Description
Hybrid Consensus Mechanism	Combines Proof of Work (PoW) and Delegated Proof of Stake (DPoS) for security and speed.
Smart Contracts & dApps Support	Enables trustless execution of automated agreements and decentralized applications.
Interoperability	Designed to communicate and integrate with other blockchain networks.
High Scalability	Supports efficient block processing and parallel transaction execution.
Developer-Friendly Tools	Offers APIs and frameworks for easy development and deployment.
Governance Mechanisms	Allows community-driven decision-making to ensure decentralization and transparency.

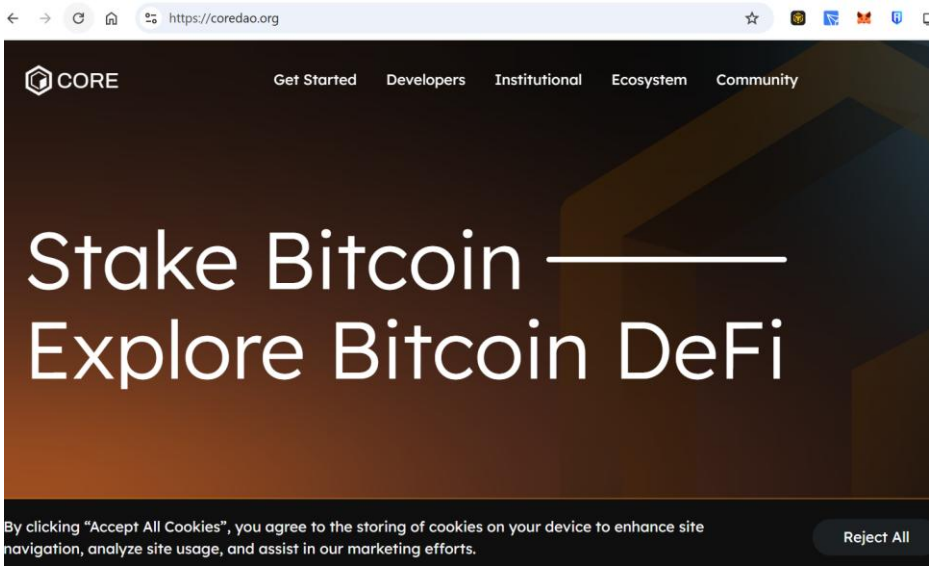

Fig 7 Official website of Core

What is CoreDaoVIP?

CoreDaoVIP is a fun learning program that teaches kids and teens about **blockchain**, **artificial intelligence (AI)**, and **Web3**—all important parts of future technology. It uses easy lessons and fun activities to help you learn how to use technology smartly and safely.

Official website: https://coredao.vip

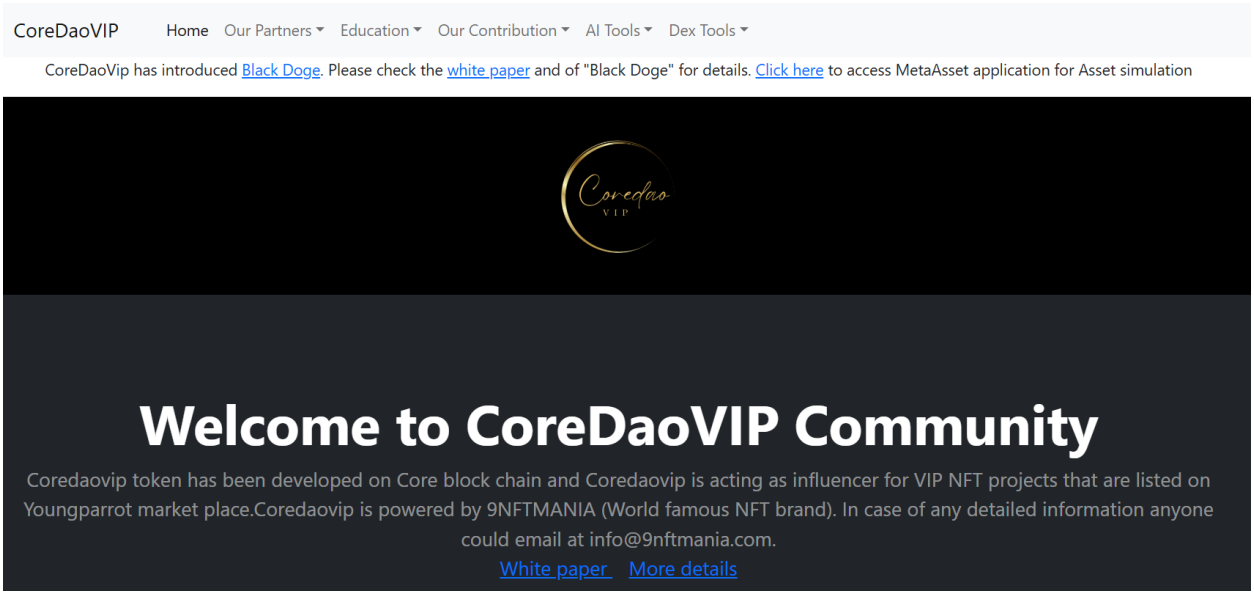

Fig 8 Official website of Coredao.vip

What is the CoreDaoVIP Token?

CoreDaoVIP also has a special digital coin (called a **token**) built on a powerful computer system called **Core blockchain**. It connects with cool digital art projects (**NFTs**) on a marketplace called **Youngparrot** and is supported by a popular brand named **9NFTMANIA**.

⚙ How It Works

- Only **100,000 CoreDaoVIP tokens** exist.
- These tokens are mixed with other digital coins like **Core** and **USDT**.
- When people buy CoreDaoVIP, it helps keep prices steady and supports people who help run the system (called **liquidity pool providers**).

🔁 How It Moves Around

- The token is given **for free** to NFT holders of 9NFTMANIA.
- When these people sell their tokens, special systems buy them back.
- The project mixes CoreDaoVIP with other tokens like **Shiba, Dogecoin, Core, and USDT** to help grow the project and reward helpers.

Working with Corescan

Corescan is a tool or feature within the **CoreDAO ecosystem** (specifically related to **Core Blockchain**) that functions as a **blockchain explorer**, similar to how Etherscan works for Ethereum. It allows users to **view, track, and verify on-chain activity** such as:

- Wallet addresses
- Transactions
- Smart contracts
- Token transfers
- Validator information
- Block details

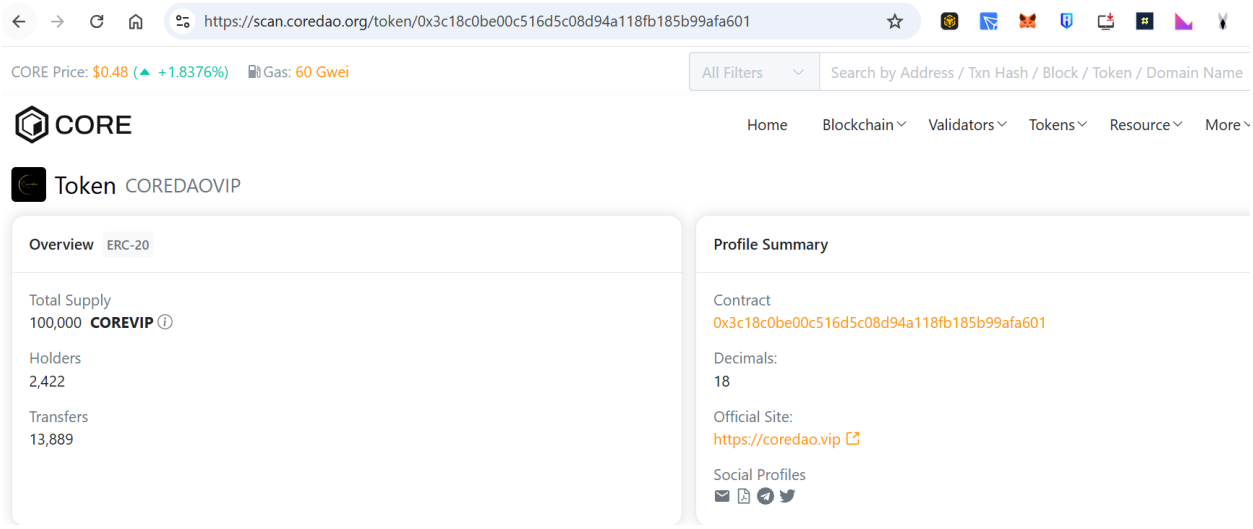

Fig 8 Exploring Coredaovip on Corescan

Steps to Check CoreVIP on Corescan
To check **CoreVIP** (a contributor or validator status in the CoreDAO ecosystem) using **Corescan**, follow these steps:

✅ **Step 1: Visit Corescan**
Go to: https://corescan.io

✅ **Step 2: Use the Search Bar**

- Enter your **wallet address** (the one linked with your CoreDAO account or validator node).
- You can also search by **transaction hash**, **block number**, or **contract address**.

✅ **Step 3: Navigate to Account Details**

- Once you search your wallet, it will open a dashboard with:
  - **Balance**
  - **Transaction history**
  - **Staking and Validator status**
  - **Smart contract interactions**

✅ Step 4: Check for CoreVIP Activity

- Look for:
  - **Tags or labels** like "CoreVIP" or "Validator"
  - **Delegations**, **rewards**, and **validator performance**
  - Details of **contributions made during CoreDAO airdrops or validator phases**

✅ Step 5: Explore Validator Info (if applicable)

If you're a validator:

- Click on the "Validators" section from the homepage or your account view
- Find your validator node by name or address
- Check your **status**, **uptime**, **delegated stake**, and **rewards**

What is BlackDoge?

BlackDoge is a fun online coin that people use to buy things or play games. It also teaches how digital money works. It's like collecting cartoon coins that have real value!

Fig 9 BlackDoge Icon

The theme of Black Doge, as proposed by Coredaovip, revolves around a groundbreaking multiverse narrative within the blockchain space.

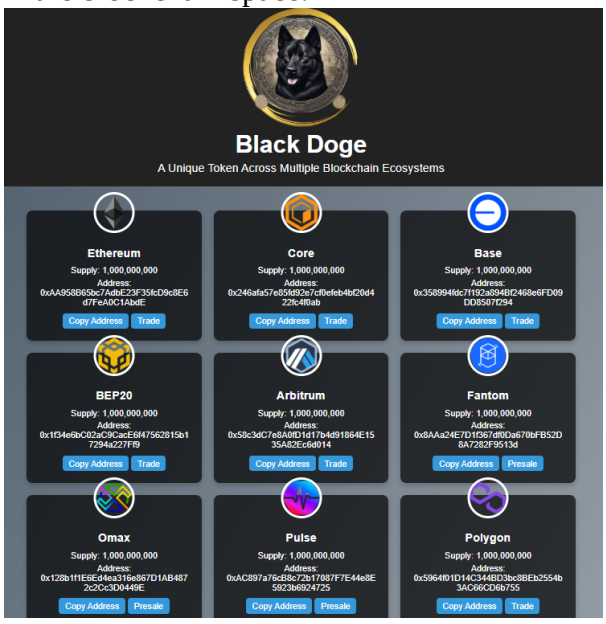

Fig 10 Multi Blockchain Ecosystem

Black Doge emerges as a unique token existing simultaneously across multiple blockchain ecosystems, including Ethereum, Core, BEP20, Arbitrum, Polygon, Fantom and Base each with a fixed supply. There are 1 Billion token on each blockchain.

5.NFT

What is NFT?

NFT stands for **Non-Fungible Token**. Think of it like a **special digital sticker**—only one exists, and you own it. People use NFTs for art, music, and even trading cards online.

What is International NFT market place?

International NFT market place is a Web 3.0 based portal where user buy, sell , transfer their NFT. Several professional also create and list their NFT at International NFT market place. Example

Logo	Name	Website	Description
	Opensea	https://opensea.io/	OpenSea is the world's largest decentralized, peer-to-peer marketplace for non-fungible tokens (NFTs). It allows users to buy, sell, and trade a wide variety of digital assets, including art, music, collectibles, and more, built on various blockchains like Ethereum, Polygon, and Solana.
	Young Parrot	https://youngparrotnft.com/	YoungParrot has a NFT marketplace, NFT launchpad and NFT staking pools for all NFT projects to use for their NFT launchpad, staking and allow users to buy/sell/borrow NFTs.YoungParrot provides the best swap on the Core blockchain. Trade your tokens in seconds, with best rate and low gas fee.
miidas	Miidas	https://core.miidas.com/	This is NFT market place that deals with Exclusive NFT for Digital and Real-world Assets. It is multichain NFT marketplace, launchpad & staking pool for both digital and physical assets.

What is 9nftmania?

9nftmania is a **world-famous NFT brand**. Its NFT are listed on YoungParrot and OpenSea NFT market places. NFT listed under some brand makes them more trustworthy.

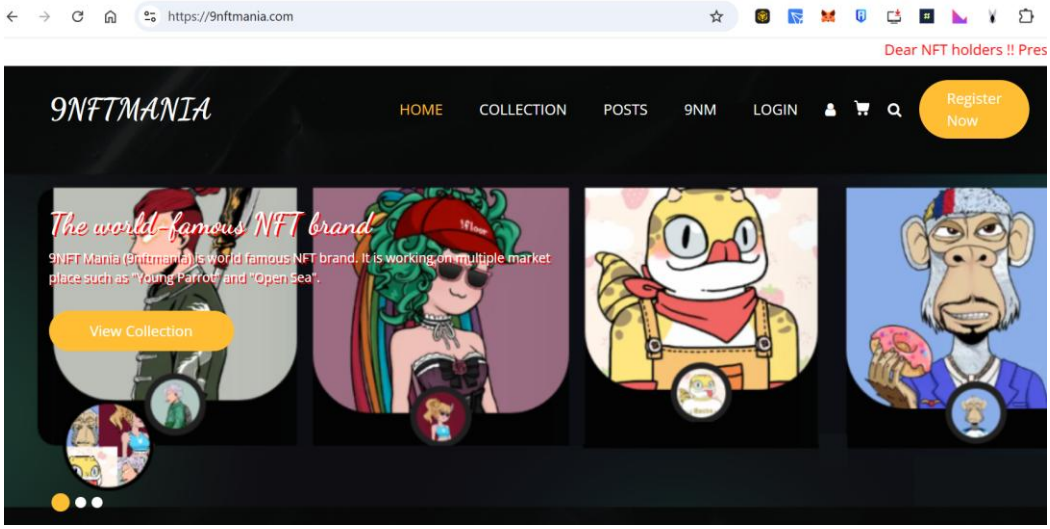

Fig 11 Official Website of 9NFTMANIA