

## L24: Lab – OpenSea Analysis

### Module C: NFTs & Digital Assets

Blockchain & Cryptocurrency Course

December 2025

By the end of this lab, you will be able to:

- Navigate OpenSea and analyze NFT collections
- Extract and decode metadata from IPFS URIs
- Track floor price, volume, and holder distribution
- Use rarity tools to evaluate trait scarcity
- Develop a systematic NFT investment evaluation framework

# Lab Overview

## Activities:

- ① Collection discovery and filtering
- ② Metadata inspection and IPFS exploration
- ③ Floor price and volume analysis
- ④ Rarity scoring and trait evaluation
- ⑤ Investment due diligence checklist
- ⑥ Case study: Analyze a trending collection

## Tools Needed:

- Web browser (Chrome recommended)
- MetaMask wallet (optional, for full functionality)
- IPFS gateway access (ipfs.io, Pinata)
- Rarity tools (rarity.tools, OpenSea trait filters)

# Activity 1: Collection Discovery

**Task:** Find and evaluate trending NFT collections

**Steps:**

- ① Navigate to OpenSea homepage (<https://opensea.io>)
- ② Browse “Trending” collections (24h, 7d, 30d volume)
- ③ Filter by category (Art, Collectibles, Gaming, etc.)
- ④ Select a collection with  $\geq 1$  ETH floor price and  $\geq 500$  items

**Key Metrics to Record:**

- Floor price (ETH)
- 24h/7d volume (ETH)
- Total supply (number of items)
- Unique owners (holder distribution)
- Total sales and average sale price

# OpenSea Collection Page Anatomy

## Top Section:

- Collection banner and profile image
- Verification badge (blue checkmark)
- Social links (Twitter, Discord, website)

## Key Statistics:

- Total volume (all-time trading volume)
- Floor price (lowest current listing)
- Best offer (highest collection-wide bid)
- Listed percentage (what fraction is for sale)
- Unique owners (holder count and distribution)

## Activity Chart:

- Price history (floor, average, volume)
- Sales events (recent transactions)

## Activity 2: Metadata Inspection

**Task:** Extract and decode NFT metadata from IPFS

**Steps:**

- ① Select a specific NFT from the collection
- ② Click “Details” section to expand
- ③ Find “Contract Address” and “Token ID”
- ④ Navigate to Etherscan contract page
- ⑤ Call tokenURI(tokenId) function in “Read Contract” tab
- ⑥ Copy the returned URI (IPFS or HTTP)
- ⑦ Access metadata via IPFS gateway (if IPFS URI)

**Example IPFS URI:**

`ipfs://QmXyZ123.../1234.json`

**Convert to Gateway URL:**

`https://ipfs.io/ipfs/QmXyZ123.../1234.json`

# Decoding Metadata JSON

## Typical Metadata Structure:

```
{  
  "name": "Cool NFT #1234",  
  "description": "A unique digital collectible",  
  "image": "ipfs://QmAbc.../1234.png",  
  "attributes": [  
    {"trait_type": "Background", "value": "Blue"},  
    {"trait_type": "Eyes", "value": "Laser"},  
    {"trait_type": "Hat", "value": "Crown"}  
  ]  
}
```

## Analysis Questions:

- Is the image stored on IPFS or centralized server?
- How many attributes does the NFT have?
- Are trait values descriptive and meaningful?

## Activity 3: Floor Price Tracking

**Task:** Analyze floor price trends and volatility

**Steps:**

- ① Navigate to collection “Activity” chart
- ② Switch to “Floor Price” view (7d or 30d)
- ③ Record daily floor price (create spreadsheet)
- ④ Calculate daily percentage change
- ⑤ Identify support and resistance levels

**Analysis Metrics:**

- **Volatility:** Standard deviation of daily changes
- **Trend:** Upward, downward, or sideways movement
- **Support:** Price level with repeated buying interest
- **Correlation:** Does floor move with ETH price?

**Red Flag:** Steep, continuous decline without stabilization

## Activity 4: Volume and Liquidity Analysis

**Task:** Evaluate trading activity and market depth

### Key Questions:

- ① What is the 7-day trading volume (ETH)?
- ② How many unique buyers traded in the last 7 days?
- ③ What percentage of the collection is currently listed?
- ④ Are there collection-wide offers (bids)?

### Liquidity Indicators:

- **High liquidity:** >10% listed, daily sales, tight bid-ask spread
- **Medium liquidity:** 5-10% listed, weekly sales
- **Low liquidity:** <5% listed, infrequent sales, wide bid-ask

**Warning:** Low liquidity = difficulty selling at floor price

## Activity 5: Holder Distribution

**Task:** Analyze ownership concentration

**Steps:**

- ① Note total supply and unique owners
- ② Calculate ownership ratio: Unique Owners / Total Supply
- ③ Use Etherscan or Nansen to identify top holders
- ④ Check if team/founders hold significant percentage

**Healthy Distribution:**

- Ownership ratio  $\geq 60\%$  (wide distribution)
- Top 10 holders own  $\leq 20\%$  of supply
- No single whale controlling  $\geq 10\%$

**Red Flags:**

- Ownership ratio  $\geq 40\%$  (concentrated holdings)
- Team holds  $\geq 30\%$  (dump risk)
- Single wallet owns  $\geq 15\%$  (manipulation risk)

## Activity 6: Rarity Analysis

**Task:** Use trait filters to identify rare NFTs

**Steps:**

- ① Click "Filter" on OpenSea collection page
- ② Expand trait categories (Background, Eyes, Hat, etc.)
- ③ Note the count for each trait value (frequency)
- ④ Calculate rarity: (Trait count / Total supply) \* 100%
- ⑤ Identify traits with  $\geq 5\%$  frequency (rare)

**Example Calculation:**

- Collection size: 10,000 NFTs
- Laser Eyes trait: 50 NFTs have this trait
- Rarity:  $(50 / 10,000) * 100 = 0.5\%$  (very rare)

**Rarity Premium:** Rare traits typically command 2-10x floor price

# Rarity Tools and Scoring

## Rarity Scoring Methods:

- ① **Trait Rarity:** Sum of individual trait rarities
- ② **Statistical Rarity:** Product of trait probabilities
- ③ **Trait Count:** NFTs with more traits = rarer

## External Rarity Tools:

- **rarity.tools:** Comprehensive rarity rankings
- **Rarity Sniper:** Real-time rarity scores
- **Traitsniper:** Trait-based filtering and scoring

## Using **rarity.tools**:

- ① Search for collection name
- ② View ranked list (Rank #1 = rarest)
- ③ Compare OpenSea listings to rarity ranks
- ④ Identify underpriced rare NFTs (arbitrage opportunity)

## Activity 7: Smart Contract Verification

**Task:** Verify collection authenticity and security

**Steps:**

- ① Copy contract address from OpenSea “Details”
- ② Navigate to Etherscan: <https://etherscan.io>
- ③ Paste contract address in search bar
- ④ Check for verified contract (green checkmark)
- ⑤ Review contract source code (if verified)
- ⑥ Confirm it uses standard ERC-721 (OpenZeppelin)

**Red Flags:**

- Contract not verified (cannot audit code)
- Custom implementation (higher risk)
- Ownership not renounced (team can modify)
- Recent contract deployment (< 1 month old)

# Activity 8: Community and Social Signals

**Task:** Evaluate project community strength

**Metrics to Check:**

- **Twitter:** Follower count, engagement rate, activity
- **Discord:** Member count, daily active users, moderation
- **Website:** Professional design, roadmap, team info
- **OpenSea:** Verified badge (blue checkmark)

**Healthy Community:**

- Twitter: >10k followers, regular updates
- Discord: >5k members, active daily chat
- Transparent team (doxxed or credible pseudonymous)

**Warning Signs:**

- Bot followers (low engagement despite high count)
- Inactive social channels (last post >1 week ago)
- Anonymous team with no track record

## Due Diligence Checklist:

- ① Contract Security:** Verified, standard ERC-721, ownership renounced
- ② Metadata Storage:** IPFS or Arweave (not HTTP), immutable URI
- ③ Holder Distribution:**  $\geq 60\%$  ownership ratio, no whale dominance
- ④ Liquidity:**  $\geq 5\%$  listed, daily sales, reasonable bid-ask spread
- ⑤ Community:** Active social channels, transparent team, engaged holders
- ⑥ Floor Price Stability:** Support levels, no steep decline
- ⑦ Rarity Structure:** Clear trait hierarchy, rarity premium exists
- ⑧ Utility:** Beyond speculation (IP rights, ecosystem access, etc.)

**Scoring:** 1 point per criterion met, 6+ = Acceptable risk, 8+ = Strong project

# Red Flags: Avoid These Collections

## Critical Warning Signs:

- ① **No verified contract:** Cannot audit code (scam risk)
- ② **HTTP metadata:** Centralized server can disappear
- ③ **Mutable tokenURI:** Team can change metadata (rug risk)
- ④ **Team holds >50%:** Dump risk, manipulation
- ⑤ **Zero liquidity:** No sales in 7+ days, <2% listed
- ⑥ **Inactive community:** No social activity, dead Discord
- ⑦ **Copycat project:** Obvious clone of popular collection
- ⑧ **Anonymous team, no roadmap:** Likely pump-and-dump

**Rule:** Any 2+ critical red flags = Avoid investment

# Case Study: Analyze Azuki Collection

**Collection:** Azuki (10,000 anime-style PFP NFTs)

**Task:** Complete investment evaluation using framework

**Steps:**

- ① Navigate to Azuki on OpenSea
- ② Record floor price, volume, holders
- ③ Verify contract on Etherscan (is it verified?)
- ④ Check metadata storage (IPFS or HTTP?)
- ⑤ Analyze holder distribution (top 10 ownership?)
- ⑥ Review social channels (Twitter, Discord activity)
- ⑦ Use rarity.tools to identify rarest traits
- ⑧ Calculate investment score (checklist)

**Discussion:** Would you invest at current floor price? Why or why not?

# Activity 9: Comparative Analysis

**Task:** Compare two collections in the same category

**Steps:**

- ① Select two PFP collections (e.g., BAYC vs. Clone X)
- ② Create comparison table with key metrics
- ③ Analyze which has better fundamentals
- ④ Consider relative floor price (valuation gap)

**Comparison Metrics:**

- Floor price (ETH)
- Market cap (floor price \* supply)
- Volume/market cap ratio (liquidity)
- Holder distribution
- Community size and engagement
- Utility and roadmap execution

## Key Takeaways

- ① OpenSea provides comprehensive collection analytics (floor, volume, holders)
- ② Metadata inspection via Etherscan and IPFS gateways reveals storage quality
- ③ Floor price stability and liquidity indicate market health
- ④ Rarity tools (rarity.tools) identify underpriced rare NFTs
- ⑤ Investment framework (8-point checklist) enables systematic evaluation
- ⑥ Red flags (unverified contract, HTTP metadata, low liquidity) signal high risk

# Lab Assignment

## Individual Project:

**Task:** Analyze a trending NFT collection and produce investment recommendation

## Deliverables:

- ① Collection overview (floor, volume, supply, holders)
- ② Metadata analysis (storage type, structure, image quality)
- ③ Floor price chart (7-day trend)
- ④ Holder distribution breakdown (top 10 wallets)
- ⑤ Rarity analysis (identify 3 rarest traits)
- ⑥ Investment score (8-point checklist)
- ⑦ Recommendation: Buy, Hold, or Avoid (with justification)

**Format:** 2-page report with screenshots and data tables

## Discussion Questions

- ① How reliable is floor price as a valuation metric for NFT collections?
- ② What additional metrics would improve the investment evaluation framework?
- ③ How can buyers verify that rarity scores are accurate and not manipulated?
- ④ Should NFT marketplaces display red flags (low liquidity, unverified contracts)?
- ⑤ How does social sentiment (hype, FOMO) impact rational investment analysis?

## L25: Digital Art and Collectibles

We will explore:

- 1/1 digital art vs. generative editions
- Generative art platforms (Art Blocks)
- PFP collections (BAYC, CryptoPunks) and cultural value
- Valuation frameworks for digital art
- Case study: Beeple's \$69M NFT sale

**Preparation:** Explore Art Blocks and SuperRare platforms