L24: Lab – OpenSea Analysis

Module C: NFTs & Digital Assets

Blockchain & Cryptocurrency Course

December 2025

Learning Objectives

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 ¿1 ETH floor price and ¿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 ¿60% (wide distribution)
- Top 10 holders own ¡20% of supply
- No single whale controlling ¿10%

Red Flags:

- Ownership ratio ¡40% (concentrated holdings)
- Team holds ¿30% (dump risk)
- Single wallet owns ¿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 ¡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

Investment Evaluation Framework

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:** ¿60% ownership ratio, no whale dominance
4. **Liquidity:** ¿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?

Next Lesson Preview

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