OpenSea Adapter Concept

Overview

An adapter to integrate OpenSea's NFT marketplace with Eliza's vector search capabilities, enabling semantic NFT search and analysis.

Key Features

Vector Search Integration

```
interface NFTVectorData {
    imageEmbedding: number[];    // CLIP or similar embedding for NFT image
    descriptionEmbedding: number[]; // Text embedding for description
    metadataEmbedding: number[];  // Combined metadata embedding
}

interface NFTMetadata {
    collection: string;
    traits: Record<string, string>;
    rarity: number;
    lastSalePrice?: number;
    currentListingPrice?: number;
}
```

Hybrid Search Capabilities

```
interface OpenSeaSearchParams {
    // Vector search
    similarImage?: string;       // Base64 or URL
    description?: string;        // Natural language description

    // Traditional filters
    collections?: string[];
    priceRange?: [number, number];
    traits?: Record<string, string>;

    // Ranking options
    rankBy?: 'price' | 'rarity' | 'similarity' | 'trending';
}
```

Real-time Market Integration

```
interface MarketActivity {
    type: 'LISTING' | 'SALE' | 'BID' | 'TRANSFER';
```

```
    timestamp: Date;
    price?: number;
    from: string;
    to: string;
    token: {
        id: string;
        collection: string;
    };
}

// Real-time event subscription
interface MarketStream {
    subscribeToCollection(collection: string):
AsyncIterator<MarketActivity>;
    subscribeToToken(tokenId: string): AsyncIterator<MarketActivity>;
}
```

Unique Capabilities

1. **Semantic NFT Search**
    - Find visually similar NFTs
    - Search by description or concept
    - Combine with traditional filters
2. **Market Intelligence**
    - Track price trends
    - Monitor collection activity
    - Analyze rarity patterns
3. **AI-Enhanced Features**
    - Generate NFT descriptions
    - Predict price trends
    - Identify similar collections

Example Usage

```
// Find anime-style NFTs with similar art style
const results = await openSeaAdapter.search({
    similarImage: "base64_image_data",
    collections: ["azuki", "clonex"],
    priceRange: [1, 10] // in ETH
});

// Monitor high-value sales
const salesStream = openSeaAdapter.subscribeToMarket({
    minPrice: 100, // ETH
    collections: ["cryptopunks", "bayc"]
});
```

```
// Find thematically similar NFTs
const similar = await openSeaAdapter.findSimilar({
    tokenId: "123",
    collection: "doodles",
    byStyle: true,
    byTheme: true
});
```

Future Potential

1. **Cross-Chain Integration**
    - Support multiple blockchains
    - Bridge different NFT standards
    - Unified search across chains
2. **AI-Powered Analysis**
    - Style transfer between collections
    - Trend prediction
    - Rarity analysis
3. **Community Features**
    - Collaborative filtering
    - Social signals integration
    - Community-driven tagging

This adapter would bridge the gap between traditional NFT marketplaces and AI-powered semantic search, enabling entirely new ways to discover and analyze digital assets.