Decentralized Financial Management: Core Features

Core Features (Detailed)

1. Wallet-Based Login (No Email or Password)

Users log in by connecting a cryptocurrency wallet (e.g., MetaMask, WalletConnect, or any Web3-compatible wallet). No email, password, or personal information is required. The wallet acts as the sole identity key—users sign a message to authenticate. This gives complete ownership of identity and access; the app never stores login credentials. If the user loses wallet access, recovery is via seed phrase (standard Web3 practice), with no central recovery system.

2. Add Transactions

Users manually input income or expenses with three fields: **amount**, **category** (predefined or custom), and **note** (optional description). Transactions are saved instantly with a timestamp. All data is stored **locally on the device** or in **end-to-end encrypted format** using the user's wallet-derived key. No central server ever receives or stores transaction data—ensuring zero risk of data breaches from cloud providers.

3. AI Expense Categorization

Built-in AI scans transaction notes and amounts to **automatically assign categories** (e.g., "Coffee at Starbucks" → Food & Dining). Uses lightweight on-device machine learning—no data leaves the device. Over time, the AI learns user habits and improves accuracy. It also surfaces **spending insights** like "You spent 42% more on dining this month" or "Transport costs are up 18% vs. last month."

4. Blockchain Transaction Record

Each transaction generates a **cryptographic hash** (unique fingerprint). This hash—not the transaction details—is **recorded on a public blockchain** (e.g., Polygon, Ethereum, or a privacy-focused chain). Users can verify the existence and timestamp of any record via blockchain explorer, proving it hasn't been altered. **No sensitive data (amount, note, category) is ever exposed**—only the proof of record.

5. Expense Summary Dashboard

A clean, real-time visual dashboard shows:

- **Total income vs. expenses** (net balance)
- **Breakdown by category** (pie chart or bar graph)
- **Monthly/weekly trends** (line graph)
- **Top spending categories**

All visuals update instantly as transactions are added. Fully customizable—users can filter by date, category, or income/expense type.

6. Fraud & Anomaly Detection (AI)

On-device AI monitors transaction patterns and **flags anomalies** such as:

- Duplicate entries (same amount + note in short time)
- Unusually high expenses (e.g., $> 3\times$ average in a category)
- Suspicious timing (e.g., large expense at 3 AM)

Alerts appear privately in-app ("Possible duplicate detected"). No data is sent externally—detection is 100% local and private.

7. Budgeting Assistant

AI-powered assistant helps users stay on track:

- Set **monthly budgets per category** (e.g., $300 on Food)
- Get **real-time alerts** when nearing or exceeding limits
- Receive **personalized savings tips** ("You could save $120/month by reducing dining out")
- Weekly summary: "You're on track in $6/8$ categories"

All suggestions are generated locally using spending history—zero external tracking.

8. Privacy Mode

The ultimate privacy shield:

- **All data encrypted** with user's wallet-derived key (AES-256)
- **Zero cloud sync by default**—data lives only on the user's device
- Optional **encrypted local backup** to user-controlled storage (e.g., iCloud, Google Drive, or USB)
- **No analytics, no tracking, no telemetry**

- Users can **export or delete all data instantly** with one tap
- Sharing (e.g., with accountant) requires explicit encrypted export—nothing is automatic.

Summary: All 8 features work together to deliver a fully private, transparent, and intelligent personal finance tool—powered by Web3 and AI, with zero trust in third parties.