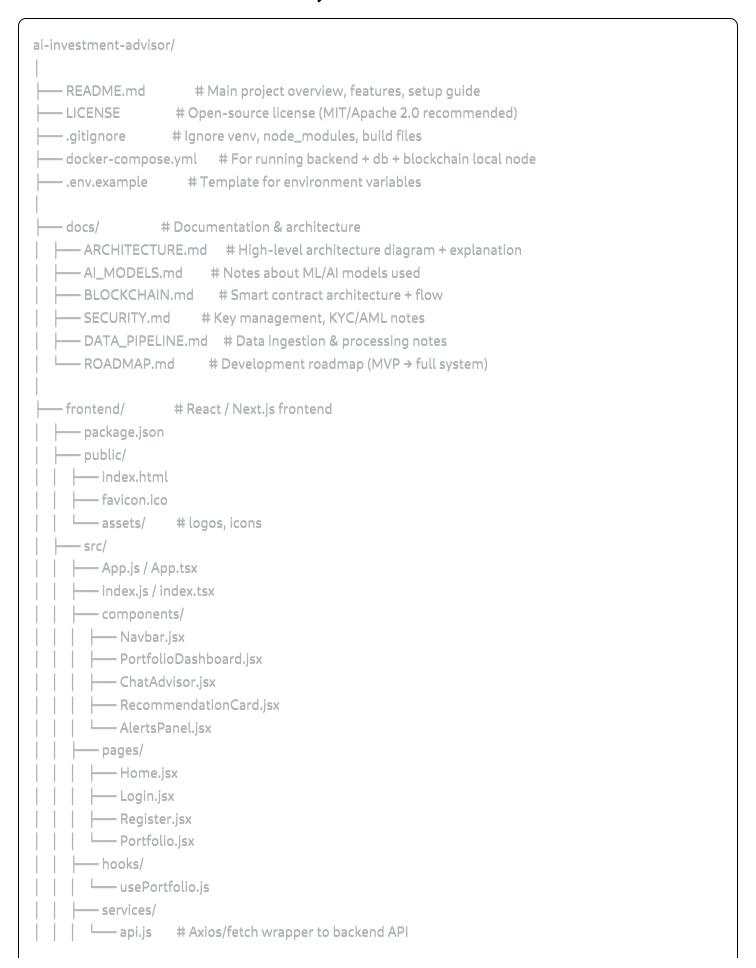
Al Investment Advisor - Project Structure



```
— styles/
    — main.css
  — tests/
 ui.test.is
– backend/ # FastAPI or Node.js backend
  - requirements.txt # (if Python) dependencies
  - package.json # (if Node) dependencies
  - src/
   — main.py / app.js # entrypoint
     – config.py # settings (db, API keys, secrets)
    — api/
     --- routes_portfolio.py
     —— routes_advisor.py
      — routes_auth.py
    routes_blockchain.py
    — services/
       — ai_engine.py # Connects to AI module
     — blockchain_service.py
      --- market_data.py
    user_service.py
     – models/
    — user.py
    portfolio.py
    recommendation.py
    — utils/
    ---- security.py
    — db.py
   logger.py
  — tests/
 test_api.py
 ai_engine/ # AI & ML models
 — notebooks/ # Jupyter notebooks for experiments
  portfolio_optimization.ipynb
  risk_analysis.ipynb
  – models/
   — portfolio_optimizer.py
    — risk_predictor.py
  llm_explainer.py
  — data/
   --- raw/ # downloaded market data
   — processed/ # cleaned/normalized data
  – utils/
```

```
data_loader.py
  blockchain/
                  # Smart contracts & blockchain utils
  — contracts/
      — PortfolioLedger.sol # Immutable audit ledger
   Rebalancer.sol # Optional auto-rebalance contract
    — OracleConsumer.sol # Reads oracle price feeds
   - scripts/
   —— deploy.js / deploy.py
   interact.js / interact.py
   — test/
   test_portfolioLedger.js
  — hardhat.config.js # If using Hardhat
truffle-config.js # If using Truffle (optional)
               # Database configs & migrations
 - db/
 — migrations/
   – schema.sql
   — seed_data.sql
— infra/
              # DevOps / deployment
 — Dockerfile.backend

    Dockerfile.frontend

 — Dockerfile.blockchain
 --- k8s/
  backend-deployment.yaml
  —— frontend-deployment.yaml
  db-deployment.yaml
 — ci-cd/
 github-actions.yml
```

Directory Overview

Root Level

- README.md: Project documentation and setup instructions
- LICENSE: Open-source licensing information
- .gitignore: Version control exclusions
- docker-compose.yml: Multi-container orchestration
- .env.example: Environment configuration template

Documentation (docs/)

Comprehensive project documentation including architecture, AI models, blockchain implementation, security measures, data pipeline, and development roadmap.

Frontend ((frontend/))

React/Next.js application with components, pages, hooks, services, and styling. Includes comprehensive UI for portfolio management and AI advisor interactions.

Backend (backend/)

FastAPI or Node.js server handling API routes, business logic, data models, and utilities. Integrates with AI engine and blockchain services.

Al Engine (ai_engine/)

Machine learning models and notebooks for portfolio optimization, risk prediction, and LLM-based explanations. Includes data processing pipelines.

Blockchain (blockchain/)

Solidity smart contracts for portfolio ledger, rebalancing, and oracle integration. Includes deployment scripts and tests.

Database (db/)

Database schema, migrations, and seed data for development and testing.

Infrastructure ((infra/))

Docker configurations, Kubernetes deployments, and CI/CD pipelines for automated deployment.