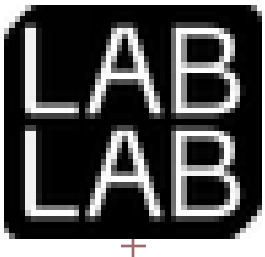


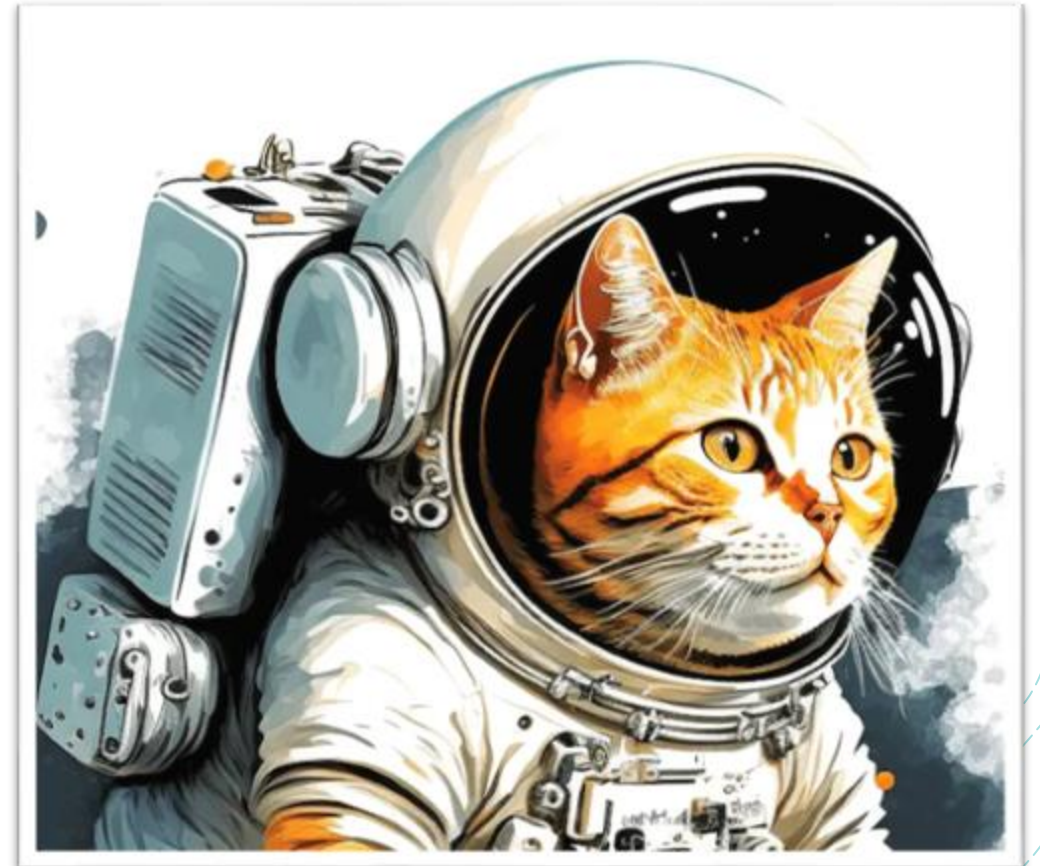
Captain Whiskers

Trustless AI Treasury Management for
the Quantum Era

Quantum-secured, AI-powered
autonomous treasury management



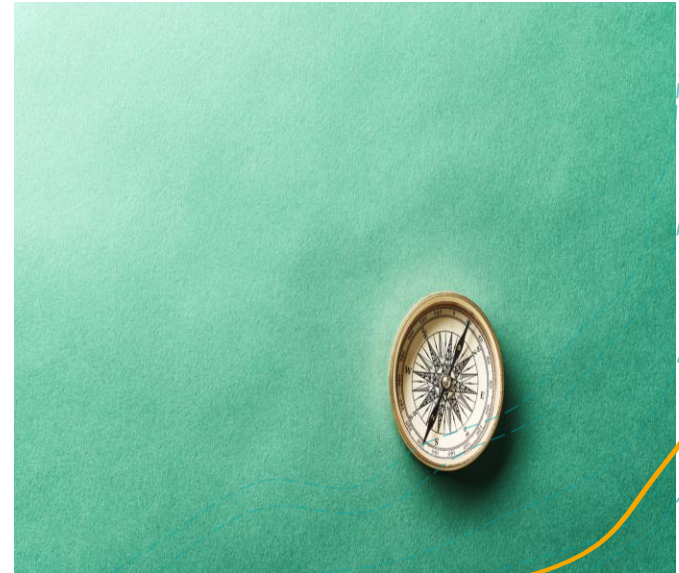
TEAM - KORY THE CAT



The Problem Statement

The Challenge: Preparing for Q-Day

- **Problem 1:** Quantum computers will break current cryptography
- **Problem 2:** Traditional treasury management lacks trustless automation
- **Problem 3:** Micropayments for AI services are inefficient
- **Problem 4:** No unified solution combining quantum security + AI commerce



Critical Issues We're Addressing

Why This Matters Now

- **Issue 1:** Post-quantum cryptography migration (Circle blog reference)
- **Issue 2:** Trustless AI agent execution (no single point of failure⁺)
- **Issue 3:** Atomic settlement for micropayments (x402 protocol)
- **Issue 4:** Quantum-ready infrastructure (future-proofing)

Our Solution Overview

Captain Whiskers: The Complete Stack

Architecture :

- Frontend (Next.js + React 19)
- Backend (NestJS + Python quantum service)
- Smart Contracts (Solidity on Arc testnet)
- Circle Integration (Wallets + Gateway)

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Core Features – Primary Elements

The Foundation

➤ Quantum Portfolio Optimization

VQE using Qiskit

Real quantum circuits (simulated, hardware-ready)

➤ Byzantine Fault Tolerant (BFT) Verification

11-node consensus

7/11 quorum requirement

On-chain logging

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➤ Post-Quantum Cryptography

CRYSTALS-Dilithium signatures

Quantum-resistant EIP-712 signing

➤ AI Agent (Captain Whiskers)

Gemini Flash / Pro integration

Natural language → executable actions

Function calling for treasury operations

Secondary Elements & Integrations

The Ecosystem

- **Circle Wallets:** Developer-controlled + user-controlled wallets
- **Circle Gateway:** Unified USDC settlement across chains
- **x402 Micropayments:** Pay-per-call, pay-on-success, atomic settlement
- **Reinforcement Learning:** Adaptive trading strategies (PPO)
- **Zero-Knowledge Proofs:** Verifiable AI decision logic (snarkjs)
- **Quantum Random Number Generation (QRNG):** Secure nonce generation

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User Workflow

How It Works: End-to-End

- User connects wallet (MetaMask/WalletConnect) or uses demo wallet
- User types natural language prompt: "Optimize portfolio for low risk, keep 60% USDC" +
- AI Agent (Captain Whiskers) processes request
- Quantum optimizer calculates optimal allocation
- BFT verifiers (11 nodes) reach consensus (7/11 signatures)
- Transaction executes on Arc testnet via Circle Gateway
- Settlement recorded on-chain (ArcScan link)
- User sees real-time updates + statistics

UI UX Design Philosophy

Beautiful, Intuitive, Quantum-Inspired

DESIGN PRINCIPLES

- Robinhood-style minimalism
- Futuristic/cyberpunk aesthetic
- Glassmorphism effects
- Quantum particle animations
- Real-time statistics visualization

KEY SCREENS

- Landing page with animated mascot
- Dashboard with live portfolio data
- AI Chat interface with decision insights
- Quantum insights visualization
- Verification monitor (BFT status)

Technical Architecture Deep Dive

Built for Scale and Security

- Monorepo structure (Turborepo)
- Backend: NestJS + TypeScript, Python quantum service
- Frontend: Next.js 14, React 19, Tailwind + Shadcn
- Database: PostgreSQL with TypeORM
- Blockchain: Arc testnet (chain ID 5042002)
- Security: JWT auth, RBAC, Argon2 hashing, input validation

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Key Differentiators

Why Captain Whiskers Wins

- Only solution combining quantum optimization + post-quantum crypto
- Full x402 micropayment implementation with atomic settlement
- Production-ready UI/UX (not just a prototype)
- Complete Circle integration (Wallets + Gateway)
- BFT consensus for trustless verification
- AI agent with natural language interface

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Impact and Future Vision

Beyond the Hackathon

- Immediate impact:
- Quantum-ready infrastructure today
- Trustless AI commerce enabled
- Micropayment ecosystem for APIs
- Future roadmap:
- Real quantum hardware integration (IBM, Google)
- Multi-chain support (Ethereum, Polygon, etc.)
- Advanced RL strategies
- ZK-proof verification on-chain

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Thank You & Q&A

Questions??

- **Live Demo Url :** [Captain Whiskers](#)
- **Github Repo Url :** [LABLAB-Hackathon](#)
- **ArcScan transaction**
- **Contact Info:**

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Pradyot Bathuri

ML Engineer



Adjetey Japhet

**Full Stack Software
Engineer**

Team Kory The Cat

Captain Whiskers Mascot

Your Quantum Copilot

- **Character design:** Astronaut cat (space-ready, tech-savvy)
- **Personality:** Friendly, confident, helpful

Features:

- Animated SVG with mood states (happy, thinking, alert)
- Text-to-speech explanations
- Visual feedback during operations
- Contextual help overlays

