C4GT DMP - Proposal Template

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GitHub ID	https://github.com/Bhumika-SP
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Current occupation *(Working Professionals - add current organization & years of exp)*	Student
Education Details *(College Name - Degree Name and branch of engineering or other course/specialization)*	College Name – Rajarajeshwari College of Engineering Branch – Computer Science and Engineering
Technical skills with level *(Mention tech skills/languages known/UI-UX and level - Novice/Intermediate/Expert)*	Languages: C, Java, JavaScript, Python |Web Development: HTML, CSS, Bootstrap, Tailwind, React, Node.js, Express.js| Database: MySQL, Mongo DB Machine Learning Libraries: Numpy, Pandas, Scikit-Learn, Matplotlib| Platforms: PyCharm, Jupiter Notebook, IntelliJ IDEA, AWS, GitHub

Title:

Secure and Smart Finance: Building a Comprehensive Platform for Fraud Detection and Financial Management

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Summary

My vision for this project is to develop a unified, secure, and user-friendly platform that enables individuals to manage their crypto and fiat assets seamlessly while being protected against fraudulent activity. I plan to integrate real-time fraud detection, portfolio tracking, and personalized financial insights. My approach includes modular development, leveraging open-source tools, and aligning closely with community and government standards.

Project Detail

1. Project Overview:

a. Understanding of the project
This project involves building a technology solution that integrates three core functionalities:

- **Fraud Detection:** Detect suspicious patterns in financial behavior using ML techniques.
- **Cryptocurrency Portfolio Tracking:** Monitor crypto asset prices and provide real-time portfolio valuation.
- **Personal Finance Assistance:** Track expenses, offer budgeting tools, and provide spending insights.

b. Issues that might come up and the support needed from org

- Access to anonymized datasets for training fraud detection models.
- Clarification on compliance with financial regulations and data handling.
- API access or integration guidance for third-party financial data sources.
  Support needed: Periodic feedback, access to mentors, and clarity on integration expectations with government systems (if applicable).

c. Solutions

- Use public datasets or synthetically generated data to begin development.
- Implement modular architecture to remain adaptable to changing regulatory requirements.
- Use open APIs (e.g., CoinGecko, Plaid) for data integration while planning for long-term interoperability with government-backed services like IndiaStack.

2. Macro Implementation Details with Timelines:

a. Milestone 1 (Week 1-3):

- Finalize technical stack and architecture
- Create base modules for data ingestion (crypto APIs, banking data)
- Set up version-controlled repository and CI/CD pipelines

b. Milestone 2 (Week 4-6):

- Implement core fraud detection engine using rule-based and ML techniques
- Build personal finance dashboard (expenses, insights, budgeting)
- Integrate crypto tracking with real-time valuation

c. Milestone 3 (Week 7-9):

- Refine UI/UX and add security layers (2FA, data encryption)
- Optimize performance and test edge cases
- Conduct feedback sessions and prepare documentation for handover

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Availability

Number of hours available per week: 25–30 hours
Other engagements: None significant that will impact this project
Additional notes: Available for regular sync-ups, async updates, and weekend collaboration if needed

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Personal Information

About Me:
I am a passionate developer with an interest in fintech and security. I enjoy building scalable applications that solve real-world problems.

Motivation:
This project perfectly aligns with my interests in cybersecurity, personal finance, and emerging technologies like cryptocurrency. I am excited by the opportunity to contribute to a real-world problem with social impact. Working under the C4GT initiative provides an excellent opportunity to collaborate with government systems and build tech that can be used at scale. This project also offers a chance to sharpen my technical, design, and planning skills while solving problems that matter.

Please mention if you have solved any issues/tickets for this or other C4GT projects: (Optional)

Link to to Issue	Resolution description in short	Link to pull request
https://github.com/AgentTorch/visualize/issues/3	Added example usage with inline comments for GeoPlot visualization to improve developer onboarding and open source clarity.	https://github.com/AgentTorch/visualize/pull/62

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Title:

Designing an ML-Based Fraud Detection System for Real-Time Financial Risk Monitoring

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Summary:

This proposal presents my plan to build a modular fraud detection system using machine learning techniques tailored for financial applications. The goal is to create a robust backend module that can detect anomalous transactions in real time by learning patterns from historic data. My approach focuses on data preprocessing, model training, integration with APIs, and visual feedback to support actionable insights.

Project Detail

1. Project Overview

a. Understanding of the project
The project aims to develop a backend service for fraud detection that can process financial transaction data and flag suspicious behavior. The module should support streaming or batch inputs and return a probability score or label for fraud. It should be designed to plug into a larger finance application or dashboard.

b. Issues that might come up and the support needed from org

- Availability of clean labeled transaction data.
- Real-time processing pipeline integration.
- Guidance on deployment best practices for production-readiness.

c. Solutions

- Use open datasets (e.g., Kaggle, IEEE-CIS) for prototyping.
- Build a modular design (data ingestion → model inference → alert).
- Consult with mentors for integration points, testing strategy, and model evaluation.

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2. Macro Implementation Details with Timelines

Milestone 1 (Week 1–2):

- Research and select relevant datasets.
- Perform data cleaning, exploratory analysis, and feature engineering.
- Set up basic binary classification model (e.g., XGBoost or Logistic Regression).

Milestone 2 (Week 3–4):

- Integrate the trained model into a microservice (FastAPI/Flask).
- Design APIs for prediction and result logging.
- Set up performance dashboards (e.g., streamlit or simple frontend).

Milestone 3 (Week 5–6):

- Test against unseen data and fine-tune thresholds.
- Add logging, monitoring, and basic visualization of alerts.
- Prepare documentation, deployment script (Docker), and submit final PR.

Availability

- **Available hours/week:** 20–25 hours
- **Other engagements:** None currently planned
- **Notes:** I am highly available and committed to this project for the full duration. I can adapt to any sync schedule as needed by the mentors.

Personal Information

About Me:
I am a developer and learner passionate about building ML-based applications, especially in the finance and security domain. I enjoy solving real-world problems using data.

Motivation:
I am applying for this project to contribute to building a scalable fraud detection system and improve my real-world machine learning deployment skills. I've previously worked on personal projects in this space and am excited to take that further under guidance and through open-source collaboration. C4GT offers a great platform to learn, build, and give back — and I'm eager to be part of that journey.

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Title:

Unified Cryptocurrency Portfolio Tracker with Exchange and Wallet Integrations

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Summary:

This proposal outlines my plan to develop a unified crypto portfolio tracker that consolidates data from various wallets and exchanges into a single dashboard. The goal is to provide users with real-time updates on their holdings, performance metrics, and alerts. My approach focuses on building secure API integrations, data normalization, and a clean, insightful frontend.

Project Detail

1. Project Overview

a. Understanding of the project
The project aims to build a web-based portfolio tracker for cryptocurrency users. It should support integration with multiple exchanges (e.g., Binance, Coinbase) and wallets (e.g., MetaMask, Ledger). Users should be able to view balances, transaction history, and performance analytics, all in one place.

b. Issues that might come up and the support needed from org

- Dealing with varying API formats across exchanges and wallets.
- Ensuring secure storage of user keys or tokens.
- Providing real-time updates without rate limit violations.

c. Solutions

- Create modular data ingestion pipelines per source with unified schema.
- Use OAuth or read-only API tokens with proper encryption practices.
- Cache frequently accessed data and update it at smart intervals to avoid hitting API limits.

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2. Macro Implementation Details with Timelines

Milestone 1 (Week 1–2):

- Research APIs of popular exchanges and wallets.
- Build authentication and initial connection layer.
- Store and normalize fetched balances and transaction data.

Milestone 2 (Week 3–4):

- Develop a dashboard to visualize portfolio summary and coin performance.
- Add historical price tracking and profit/loss analytics.
- Implement refresh logic for near real-time updates.

Milestone 3 (Week 5–6):

- Add support for alerts (e.g., price drop, portfolio value change).
- Finalize responsive frontend using React/Tailwind.
- Write comprehensive documentation and deployment guide.

Availability

- **Available hours/week:** 20–25 hours
- **Other engagements:** No other current internships or full-time commitments
- **Notes:** I'm flexible with time zones and committed to attending weekly syncs or mentorship calls.

Personal Information

About Me:
I'm a developer interested in building practical financial tools, with a strong focus on usability, transparency, and real-time data systems.

Motivation:
This project resonates with my personal interest in cryptocurrencies and financial management tools. I've often felt the need for a consolidated view of my crypto assets, and building one that others can use is both exciting and meaningful. I see this as a great opportunity to deepen my full-stack development skills, contribute to open source, and work under the mentorship of experienced developers as part of the C4GT program.

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