



Innovate.DTCC: AI-Powered Hackathon

Revolutionize Financial Markets with Cutting-Edge AI and Machine Learning

Data Requirements for Use Cases

Participants are required to bring their own white data for the hackathon, ensuring it is publicly available and free from restrictions, and should use this data responsibly throughout the event to develop and demonstrate their AI/ML solutions while maintaining ethical standards and legal compliance.

Themes and Use Case Details

Anomaly detection for identifying potential risks, fraud, and market manipulation theme

1. **Fraud Detection:** Create an AI system or enhancements to an existing system to improve the detection of any fraudulent capital market activities. Examples could include accounting fraud, financial statement manipulation, or non-compliant trading. Data sources could include financial statements, news articles, or trade data.
2. **Anomaly Detection for Securities Transactions:** Develop an AI-powered model that can detect suspicious or anomalous patterns in securities transactions. The model could detect market manipulation, compliance breaches etc. across market participants (e.g., brokers, exchanges, custodians).
3. **Insider Threat Detection & Mitigation System:** Build a machine learning-based system that can monitor employee behavior and system access patterns to detect insider threats. The system would flag anomalies such as unusual access requests, excessive data downloads, or attempts to access unauthorized systems.

Risk Mitigation and preparing for future threats

4. **Third-Party Risk Scoring Platform:** Create a machine learning based system that uses cybersecurity posture of third-party vendors, historical data feeds, security ratings, and vendor assessments to predict potential third-party risks.
5. **Automated Regulatory Change Management Platform:** Build an AI-powered tool that tracks changes in global financial regulations, automatically assesses their impact on the organization's processes, and recommends adjustments to remain compliant.
6. **AI-Powered Cyber Incident Response Playbook:** Create an AI-driven incident response system that automatically identifies cyber threats, recommends response actions, and orchestrates workflows in during a cyber incident. The platform could provide predictive recommendations based on similar incidents across the financial industry.



Predictive Modeling and Forecasting - Analyze historical data and identify patterns that can be used to predict future trends, movements, and events in Capital Markets

7. **Sentiment Analysis:** Leverage natural language processing (NLP) techniques to analyze news articles, social media posts, and other industry-wide textual data sources to gauge market sentiment and predict potential market movements.
8. **Regulatory Compliance:** Utilize ML models to continuously monitor and ensure compliance with various financial regulations, such as anti-money laundering (AML) and know-your-customer (KYC) requirements.
9. **Predictive Liquidity Management:** Forecast liquidity demands and collateral movement across CSDs. Prevent trapped liquidity by allowing participants to better manage collateral and minimize settlement delays. Develop an AI algorithm that suggests optimal collateral substitutions in real-time for margin calls across participants to measure and manage risk.

Self-Service Investigation (Chat NLP)

10. **Corporate Action Reference Data Ingestion:** Ingest corporate action data from multiple sources such as regulatory filings, exchange announcements, emails, and news feeds. NLP models process unstructured and semi-structured formats to extract key corporate action details such as issuer, events, event type, affected securities, etc.
11. **Regulatory Compliance:** Develop NLP models to automatically analyze and interpret financial regulations, public legal documents, and compliance policies, ensuring adherence to relevant laws and guidelines.
12. **Industry FAQ Chatbot:** Compile a superset of valuable capital markets data from publicly available sources to help capital market participants quickly access accurate, actionable insights, enhancing decision making and market intelligence without the need for manual research.
13. **Risk Assessment and Reporting:** Implement NLP models to automatically generate risk assessment reports by analyzing financial statements, regulatory filings, and other relevant documents, enabling more efficient risk management processes.



Optimization & Automation

14. **Settlement Optimization:** AI-driven automation to handle the end-to-end settlement process, including trade verification, reconciliation, and error detection to reduce manual workloads and enable teams to focus on more complex tasks. Create the most efficient settlement algorithm to optimize intraday liquidity/credit, allowing for partial settlement with available inventory, enabling auto-borrow facilitates to address insufficient inventory, and minimize/eliminate daisy chain events.
15. **Financing and Trading Optimization:** Link the trading activity with the financing arm of the same transactions to not only identify inefficiencies in the current siloed model, but to bring the total cost of trade to the point of order entry (e.g. link cash equity trading, with securities lending market, with FX market, with Repo market, etc.). Also, would allow T+0 atomic settlement. Cost and friction points identified at the point of order entry.
16. **Inventory Optimization:** Develop securities inventory mgmt. algorithm which identifies the best means to move inventory around the world (across CSDs) to most effectively meet the settlement (or collateral) obligations of the firm.