IoT-Based Applications for Intelligent Systems

Analyzing Bitcoin Blockchain Historical Data using BigQuery

Project Context: Blockchain technology, introduced by Satoshi Nakamoto in 2009 as an integral part of Bitcoin, serves as a distributed and public ledger for recording transactions. Its implementation ensures secure peer-to-peer communication by linking blocks with hash pointers, timestamps, and transaction data. Bitcoin, a decentralized digital currency, utilizes blockchain to store transactions in a distributed manner, addressing vulnerabilities in the traditional financial industry.

Project Scope: This project involves accessing information related to blockchain blocks and transactions from the bigquery-public-data:crypto_bitcoin dataset, updated every 10 minutes on Google Cloud's BigQuery platform. Extracted data will be processed as data frames to derive insightful analyses.

Project Objectives:

- How does the historical trend of transaction counts correlate with major events?
- What are the top 3 transfer volume of BTC over time?
- What insights can be gained from changes in the mean transfer volume over time? Are there specific periods of notable volatility or stability?
- Are there specific periods where the average input-output count deviates significantly from the norm?
- How much difficulty of mining a block vary over time or the trend of difficulty is correlated any major event?
- How does the growth or decline of active addresses correspond to shifts in user behavior, market sentiment, or technological advancements?

Inspirations: The project draws inspiration from questions surrounding Bitcoin transactions, transfer volumes, mining difficulty, and circulating supply, aiming to provide valuable insights into the cryptocurrency ecosystem.

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