DATA ANALYTICS

Ethereum in BigQuery: a Public Dataset for smart contract analytics

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Data Engineer, CoinFi

August 29, 2018

Ethereum and other cryptocurrencies have captured the imagination of technologists, financiers, and economists. Digital currencies are only one application of the underlying blockchain technology. Earlier this year, we made the Bitcoin dataset publicly available for analysis in Google BigQuery. Today we're making the Ethereum dataset available.

Like its predecessor Bitcoin, you might think of the Ethereum blockchain as an immutable distributed

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balance of a given wallet address

The Ethereum blockchain data are now available for exploration with BigQuery. All historical data are in the `ethereum_blockchain` dataset (documentation here), which updates daily. The Ethereum ETL project on GitHub contains all source code used to extract data from the Ethereum blockchain and load it into BigQuery—we welcome more contributors and more blockchains!

Why make Ethereum blockchain data available on Google Cloud?

While the Ethereum blockchain peer-to-peer software has an API for a subset of commonly used

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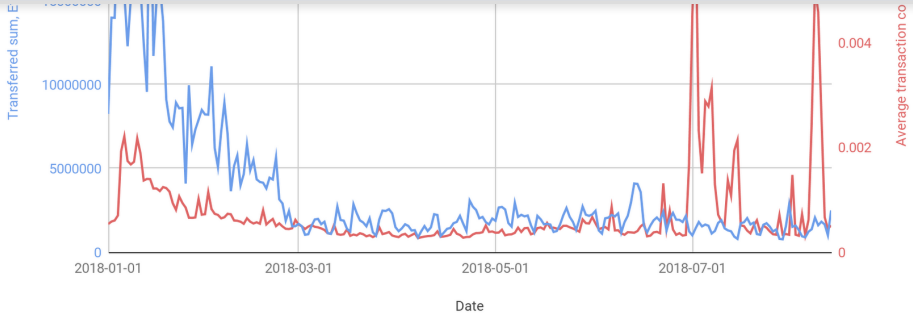

A visualization like this (and the underpinning database query) is useful for making business

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The Ethereum blockchain dataset is also available on Kaggle here. You can query the live data in

Below, we show a number of interesting queries and visualizations based on the Ethereum dataset. Our analyses focus on three popular topics:

- Smart contract function calls
- On-chain transaction time-series and transaction networks
- Smart contract function analytics

Analysis 1: Popular Smart Contracts Event Logs

The main use case for the Ethereum blockchain has so far been the exchange of digital tokens. Below

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The most popular ERC-721 smart contract by transaction count is

We can visualize the CryptoKitty pedigree, as shown here for accounts that own at least 10 CryptoKitties. Color indicates owner, while size indicates the PageRank (reproductive fitness) of each CryptoKitty:

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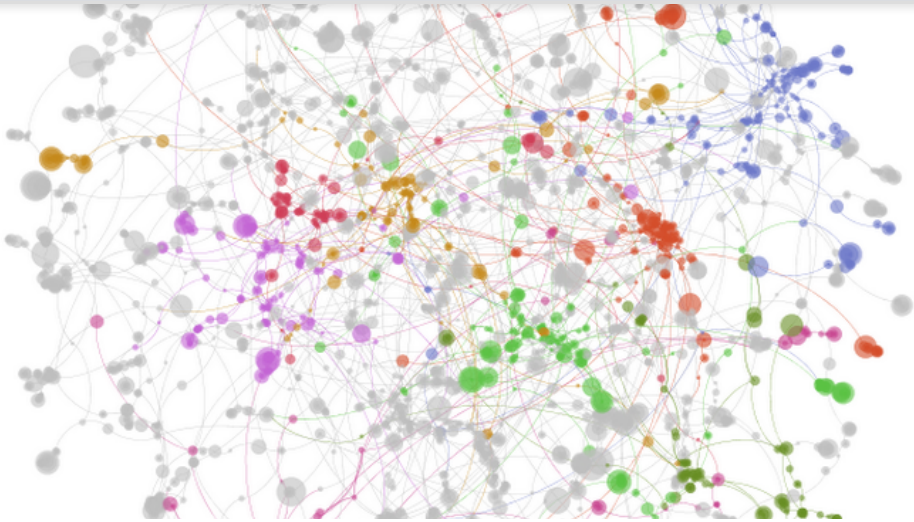
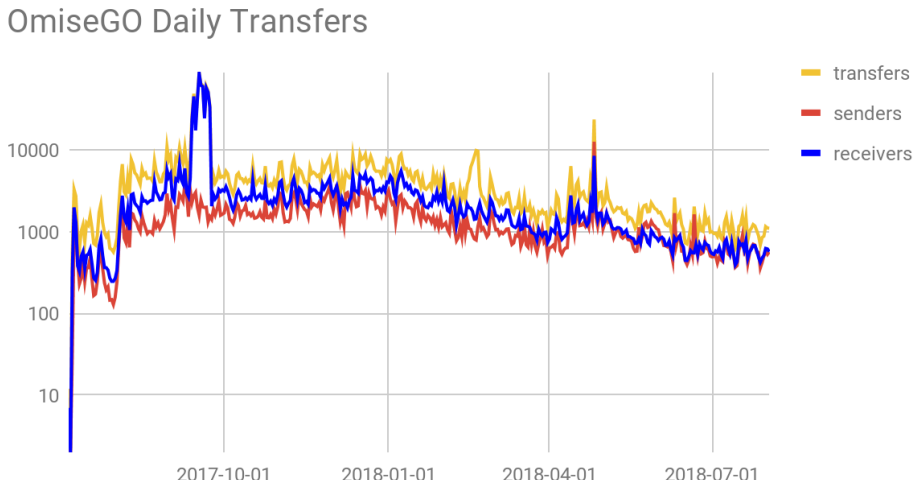


At position #5, one of the most popular tokens is OmiseGO (OMG) at address



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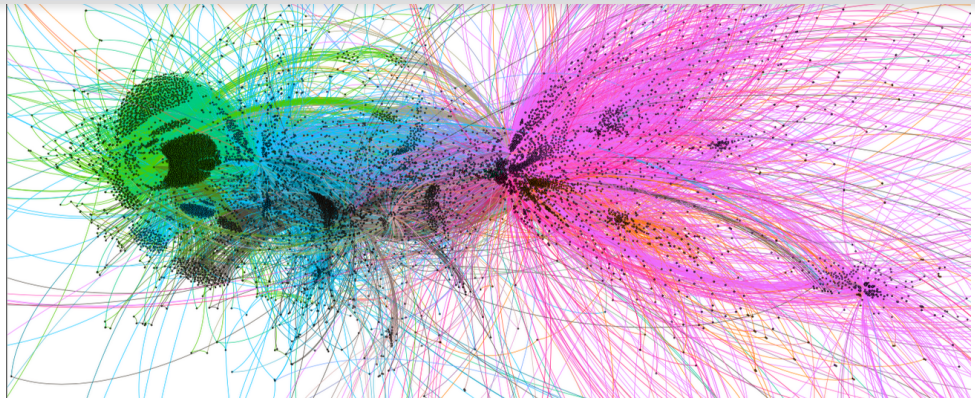
addresses that transfer often with one another—to the exclusion of members of other groups—will



to find other games also implementing similar gameplay mechanics to the CryptoKitties GeneScience

But there are also some others (e.g. CryptoPuppies at 0xb64e6bef349a0d3e8571ac80b5ec522b417faeb6), that appear to be highly similar contracts, as measured by method signatures.

Acknowledgments

We'd like to thank our collaborators within and outside Google for making this blog post possible. For more info about the authors and organizations that contributed to this article, please see:

- Allen Day, Google

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