

University of Geneva

High Frequency Data at the Geneva Finance Research Institute



The University of Geneva is a public research university located in Geneva, Switzerland. It was founded in 1559 by John Calvin as a theological seminary and law school.


Overview

The University of Geneva is the second largest university in Switzerland boasting 16,500 students from around the world. As a Professor of Finance at the Geneva Finance Research Institute (GFRI) and Senior Chair of the Swiss Finance Institute, Fabio Trojani oversees a quantitative research team that carries out research in various areas of Financial Economics, Financial Econometrics and Statistics. An important part of Professor Trojani's research builds on the analysis of large and complex data sets, using computation-intensive optimization and simulation methods that often deal with billions of records.

The Challenge with Data

Professor Trojani's research team was challenged with transforming high volumes of financial data into a format that would provide researchers the medium to analyze data in a variety of ways, and be able to track and easily reproduce the whole data-analytic process. The data was in tables, ranging from 1 billion up to 44 billion rows, and a solution was needed to store, aggregate, disseminate and manipulate this data – often within microseconds.

"If you don't have the proper computational environment, you aren't able to address most of the questions that arise in our research. This type of research is only possible if you have the right type of infrastructure," says Professor Trojani. "Aggregation and decimation are two conceptually simple yet powerful techniques for reducing and transforming massive data volumes. Infobright helped us crucially with just that: enabling the manipulation of data in tables with up to 44 billion records! Furthermore, the primary users in our group are researchers working in teams and sharing the data, who have heterogenous technical skills. Particularly, researchers who are not skilled in writing queries needed a solution simplifying the structure of data and still enabling a possibly complex data analysis."



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Fabio Trojani
Professor of Finance
Geneva Finance Research Institute and Senior Chair of the Swiss Finance Institute

Enter Ignite's Infobright® DB

Ignite's Infobright DB coupled with Data Load Processor (DLP) eliminated strain on servers by preparing the data on a separate machine. Using its columnar structure, producing custom data sets on Infobright DB was easy, and performance was stellar. Infobright DB is used for aggregation, dissemination, and parallel query performance. The research team is using the high powered Infobright DB storage engine to analyze High Frequency Trading, Flash Crashes, and calculate National Best Bid and Offer Prices (NBBO).

With Infobright DB's high compression rates, compressed data files can be kept as evidence of data results. This is a critical issue in order to make research replicable, which is an essential requirement for scientific research itself. Performance was exceptional when running parallel queries and compression rates were better than typically anticipated. For instance, Infobright DB's proprietary compression algorithms were able to compress the data from several terabytes of high frequency trades down to 77 GB into a single table. The reduction in storage and computation cost and the ease of administration, with no index management required, were key elements in Professor Trojani's decision to select Infobright DB as the analytic database for research.

About Ignite Technologies

Founded in 2000, Ignite is a privately-held company and a member of the ESW Capital group of companies. Since it was reinvented on the heels of a senior management change in 2013, the Company's mission is to help customers Ignite the power of their workforce to drive better business performance. Ignite leads all its efforts with a sharp focus on a simple but challenging objective – 100% Customer Success – measured through the achievements of its customers. The Company launched its innovative, new Ignite Prime program in 2017 delivering free enterprise software to its licensed and supported customers. For more information on Ignite's solutions and innovative Prime program, visit www.ignitetech.com