Cloud based Genome Variant Analysis for Next Generation Sequencing Data

How Persistent Systems developed a cloud based solution enabling fast translation of next generation sequencing data

Background

Our client is a global Life Sciences and Biotechnology tool company. As one of the leaders in Next-Generation Sequencing technology, they provide an extensive range of products and services including instruments, everyday lab essentials and services in the fields of Research, Applied, and Medical Sciences. The client’s Sequencing solutions are developed to match any laboratory’s needs and requirements.

One of their many brands focuses on DNA sequencing system. This revolutionary sequencing technology plays a key role in medical diagnostics, overcoming many of the challenges of second generation sequencing systems. This unique DNA sequencing system combines fluidics, micromachining, and semiconductor technologies enabling direct translation of chemically encoded genetic information into digital genetic information on a semiconductor chip. This translation of information is a lengthy process and the client was in need of a solution which would help them shorten the lead-time.

Thanks to our knowledge in Bioinformatics and Next-Generation Sequencing as in addition to our expertise in next generation technologies including cloud-based solutions, Persistent was chosen as their preferred partner. Our engagement had the following objectives:

- Develop a solution that would enable fast translation of next generation sequencing data into meaningful biological results
- Deliver a solution with flexible framework that easily enabled the development of new templates in future

The Persistent Solution

Persistent Systems understood the client requirements and developed a solution keeping in mind the requirements for investigating variants in human data. Persistent was successful in developing a cloud based solution that sped up the translation process. In addition, the solution enabled Next Generation Sequencing applications to understand individual variations. In short, the solution was a cloud based genome variant analysis software package, specifically designed for sequencing variation reporting. The stand-alone suite of our software included various algorithms such as:

- Open source algorithms for calling genetic variants
- Algorithms to map and align product’s sequence data with those for calling variants such as insertions, deletions and single nucleotide polymorphisms
The Results

Persistent was able to develop an end to end solution enabling the client with easy adoption and quick analysis of the information and results. Our application enabled the client to develop a new business model and cater to even smaller users and labs with no infrastructure. The solution also provided the following additional benefits:

- Faster process using our analysis pipeline, visualizations and custom reports
- Fast and easy client set up and analysis of large data sets
- Flexible framework allowing the client to add new workflows and develop new templates in future

About Persistent Systems

Established in 1990, Persistent Systems (BSE & NSE: PERSISTENT) is a global company specializing in software product development services. For more than two decades, Persistent has been an innovation partner for the world’s largest technology brands, leading enterprises and pioneering start-ups. With a global team of 6,700+ employees, Persistent has 300+ customers spread across North America, Europe, and Asia. Today, Persistent focuses on developing best-in-class solutions in four key next-generation technology areas: Cloud Computing, Mobility, BI & Analytics, Collaboration across technology, telecommunications, life sciences, consumer packaged goods, banking & financial services and healthcare verticals. For more information, please visit: www.persistentsys.com.

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