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Singapore's TigerGraph aids effective treatments for acute lymphoblastic leukemia

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Leading university pioneers use of graph analytics with AI, machine learning and translational bioinformatics to better predict treatment outcomes



TigerGraph, provider of the leading graph analytics platform, on March 30, 2021, announced that the Technical University of Denmark (DTU), a leading university in the areas of technical and natural sciences, is using TigerGraph's advanced graph analytics with machine learning and AI techniques to improve the treatment of acute lymphoblastic leukemia.

Researchers at DTU are part of a major project across Denmark and Sweden to map genetic material for everyone with childhood cancer. As part of a larger collaboration through the EU-funded iCOPE (Interregional Childhood Oncology Precision Medicine Exploration), the process starts with patient blood tests through Whole Genome Sequencing (WGS) paired with RNA-seq expression data are used to find aberrant expression patterns correlated or possibly caused by enhancer mutations. The long-term goal of iCOPE is to improve diagnostics, treatment, cure rates, and the overall life situation of children with cancer.

This process generates enormous amounts of data that using TigerGraph will be linked together with various other data points about the patient's life, illness, and treatment in order to understand to a much greater extent why children get cancer, provide earlier diagnosis and far more effective treatment.

As Jesper Vang, PhD Student, Department of Health Technology, Cancer Systems Biology at DTU explains, "Our current system only hosts raw data such as genotype and whole-genome sequenced data. This raw data is run through a custom pipeline that calls genetic variants and annotates the data in a MySQL DB. However, we needed something easier to work with specifically for the clinical personnel, that also allows them to look up genetic associations which is a perfect use case for graph analytics".

DTU opted for an on-premise graph database platform that would deliver the required performance and evaluated a number of options, in particular, Neo4j but concluded that only TigerGraph could scale and provide the analytical depth the project required. "In our testing, Tigergraph was the only solution offering the highest performance with the ability to scale to the

levels we will eventually need," explains Vang.

DTU is in the final stages of bringing the full system online and it is already being used in a specific project that combines the fields of AI, machine learning and translational bioinformatics to create models that can predict the risk of relapse and toxicity within acute lymphoblastic leukaemia treatments.

Martin Darling, VP EMEA at TigerGraph added, "The work at DTU and across the wider iCOPE project is transformational and highlights how the application of clinical excellence with innovative technologies can unlock breakthrough insights within areas such as life sciences. We are delighted to have Jesper present a full case study on the project at the upcoming Graph + AI Summit this April."

TigerGraph's upcoming Graph + AI Summit, the industry's only open conference for accelerating analytics, AI, and machine learning with graph, will feature customer use case sessions and speakers from the world's largest companies and most innovative startups and universities. Keynote speakers include Harry Powell, director of data and analytics at Jaguar Land Rover, who will share how Jaguar Land Rover used graph to accelerate supply chain planning from three weeks to 45 minutes and deliver three times the business value from data. Noel Yuhanna, Vice President and Principal Analyst at Forrester Research, will bring insights from Forrester clients across all industries who are driving business outcomes by combining graph-based analytics, AI, and machine learning. Danny Clark, Head of Fraud Strategy at NewDay, will explain how they identify and prevent fraudsters from joining their network faster than ever before by using graph and machine learning to check data against known and new fraud syndicates. Graph + AI Summit, the industry's only open conference for accelerating analytics and AI, will run as a virtual conference on April 21-22, 2021. To register for the event, please visit https://www.tigergraph.com/graphaisummit/.