Improving Data Processes with Knowledge Graphs

AllegroGraph Thought Leadership Article from Big Data Quarterly

Knowledge graphs link together data of any variety, structure, or format in business terms via uniform data models. Organizations can then join and traverse all of their data, semantically tagged with unique machine-readable identifiers, making the platform ideal for intelligent systems, machine learning analytics, interoperability, and an array of other benefits influential for AI applications.

The technology is gaining the attention of research firms and consultancies. In 2018 and 2019, knowledge graphs appeared on Gartner's Hype Cycle for Emerging Technologies, acknowledged for their hearty connections to pertinent data. According to Gartner, "These ecosystems developed as digitalization morphed traditional value chains, enabling more seamless, dynamic connections to a variety of agents and entities across geographies and industries. In the future these will include decentralized autonomous organizations (DAOs), which operate independently of humans and rely on smart contracts."

Download the Full White Paper.

100 Companies That Matter in Knowledge Management

Franz Inc., is proud to announce that it has been named to The 100 Companies That Matter in Knowledge Management by KMWorld. The annual list reflects the urgency felt among many organizations to provide a timely flow of targeted information. Among the more prominent initiatives is the use of AI and cognitive computing, as well as related capabilities such as machine learning, natural language processing, and text analytics.

"Knowledge management software and services providers are embracing a fresh wave of technological innovation to address heightened expectations—among both customers and employees—for the right information to be delivered to the right people at the right time, said Tom Hogan, Group Publisher at KMWorld. "To showcase organizations that are advancing their products and capabilities to meet changing requirements, KMWorld created the annual list of 100 Companies That Matter in Knowledge Management."

"We are honored to receive this acknowledgement for our efforts in delivering Enterprise Knowledge Graph Solutions," said Dr. Jans Aasman, CEO, Franz Inc. "In the past year, we have seen demand for Enterprise Knowledge Graphs take off across industries along with recognition from top technology analyst firms that Knowledge Graphs provide the critical foundation for artificial intelligence applications and predictive analytics. Our AllegroGraph Knowledge Graph Platform Solution offers a unique comprehensive approach for helping companies accelerate the creation of Enterprise Knowledge Graphs that deliver new value to their organization."

How To Avoid Another AI Winter

Forbes published the following article by Dr. Jans Aasman, Franz Inc.'s CEO.

Photo: GETTY

Although there has been great progress in artificial intelligence (AI) over the past few years, many of us remember the AI winter in the 1990s, which resulted from overinflated promises by developers and unnaturally high expectations from end users. Now, industry insiders, such as Facebook head of AI Jerome Pesenti, are predicting that AI will soon hit another wall—this time due to the lack of semantic understanding.

"Deep learning and current AI, if you are really honest, has a lot of limitations," said Pesenti. "We are very, very far from human intelligence, and there are some criticisms that are valid: It can propagate human biases, it's not easy to explain, it doesn't have common sense, it's more on the level of pattern matching than robust semantic understanding."

Read the full article at Forbes.

California utilities should have used digital twin technology instead of power shutoffs

Northern California's proactive power outages were not necessary last fall. Digital Twin technology can predict utility line failures and turn off power in milliseconds to avoid the potential of sparks igniting the surrounding area.

Digital twin technologies are gaining traction across industries and use cases. Initially devised as a means of monitoring assets and production settings in manufacturing, this technology has quietly seeped into other verticals like hospitality, construction, and building management and soon, electricity delivery.

The premier problem digital twins will solve is predicting power grid failure, which would alleviate the social, economic, and political issues that resulted from efforts to reduce the incidence and degree of catastrophes, property loss, and deaths stemming from downstream effects of power grid failure—such as recurring wildfires.

Digital twins can allay these concerns because they're based on real-time signals from a comprehensive set of factors that c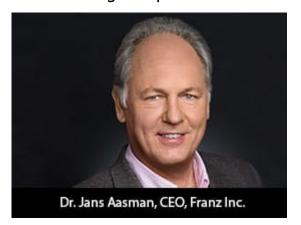ould be indicative of power grid woes related to environmental, meteorological, or technology concerns. Moreover, they can deliver accurate predictions for

each of these factors well in advance of failure—in some cases as much as 28 days.

Read the full article at PowerGrid International.

Franz Inc. to Present at The Global Graph Summit and Data Day Texas

Dr. Jans Aasman, CEO, Franz Inc., will be presenting, "Creating Explainable AI with Rules" at the Global Graph Summit, a part of Data Day Texas. The abstract for Dr. Aasman's presentation:

Dr. Jans Aasman, CEO, Franz Inc.

> *"There's a fascinating dichotomy in artificial intelligence between statistics and rules, machine learning and expert systems. Newcomers to artificial intelligence (AI) regard machine learning as innately superior to brittle rules-based systems, while the history of this field reveals both rules and probabilistic learning are integral components of*

AI. This fact is perhaps nowhere truer than in establishing explainable AI, *which is central to the long-term business value of AI front-office use cases."*

"The fundamental necessity for explainable AI spans regulatory compliance, fairness, transparency, ethics and lack of bias — although this is not a complete list. For example, the effectiveness of counteracting financial crimes and increasing revenues from advanced machine learning predictions in financial services could be greatly enhanced by deploying more accurate deep learning models. But all of this would be arduous to explain to regulators. Translating those results into explainable rules is the basis for more widespread AI deployments producing a more meaningful impact on society."

The Global Graph Summit is an independently organized vendor-neutral conference, bringing leaders from every corner of the graph and linked-data community for sessions, workshops, and its well-known before and after parties. Originally launched in January 2011 as one of the first NoSQL / Big Data conferences, Data Day Texas each year highlights the latest tools, techniques, and projects in the data space, bringing speakers and attendees from around the world to enjoy the hospitality that is uniquely Austin. Since its inception, Data Day Texas has continually been the largest independent data-centric event held within 1000 miles of Texas.

Franz's 2020 Predictions in the News

Looking to the future of AI, KnowledgeGraph and Semantics we

had a number of publications cover our views of where AllegroGraph is headed.

Datanami

20 AI Predictions for 2020

We're still in the midst of a fake news crisis, and with the emergence of deep fakes, it will likely get worse. Luckily, we have the technology available to begin to address it, says Dr. Jans Aasman, the CEO of Franz.

"Knowledge graphs, in combination with deep learning, will be used to identify photos and video that have been altered by superimposing existing images and videos onto source images," Aasman says. "Machine learning knowledge graphs will also unveil the origin of digital information that has been published by a foreign source. Media outlets and social networks will use AI knowledge graphs as a tool to determine whether to publish information or remove it."

DBTA

Ten Predictions for AI and Machine Learning in 2020

AI Knowledge Graphs will Debunk Fake News:"Knowledge Graphs in combination with deep learning will be used to identify photos and video that have been altered by superimposing existing images and videos onto source images. Machine learning knowledge graphs will also unveil the origin of digital information that has been published by a foreign source. Media outlets and social networks will use AI Knowledge Graphs as a tool to determine whether to publish information or remove it." — Dr. Jans Aasman, CEO of Franz, Inc.

SD Times

Software predictions for 2020 from around the industry

Jans Aasman, CEO of Franz, Inc.
Digital immortality will emerge: We will see digital immortality emerge in 2020 in the form of AI digital personas for public figures. The combination of Artificial Intelligence and Semantic Knowledge Graphs will be used to transform the works of scientists, technologists, politicians and scholars into an interactive response system that uses the person's actual voice to answer questions. AI digital personas will dynamically link information from various sources — such as books, research papers and media interviews — and turn the disparate information into a knowledge system that people can interact with digitally. These AI digital personas could also be used while the person is still alive to broaden the accessibility of their expertise.

Dataversity

Semantic Web and Semantic Technology Trends in 2020
"The big-name Silicon Valley companies (LinkedIN, Airbnd, Apple, Uber) are all building knowledge graphs. But more importantly, Fortune 500 companies, especially banks, are also investing in knowledge graph solutions."

IoT gets into the picture too. Aasman points to "digital twins," which can be thought of as specialized knowledge graphs, as an exceptionally lucrative element of the technology with an applicability easily lending itself to numerous businesses. Its real-time streaming data, simulation capabilities, and relationship awareness may well prove to be the 'killer app' that takes the IoT mainstream, he said. As an example, by consuming data transmitted by IoT sensors, digital twins will inform the monitoring, diagnostics, and prognostics of power grid assets to optimize asset performance and

utilization in near real-time.

InsideBigData

2020 Trends in Data Modeling: Unparalleled Advancement

Shapes Constraint Language (SHACL): SHACL is a framework that assists with data modeling by describing the various shapes of data in knowledge graph settings, which produces the desirable downstream effect of enabling organizations to automate "the validation of your data," remarked Franz CEO Jans Aasman. SHACL operates at a granular level involving classifications and specific data properties.

Workflow

2020 Trends in CyberSecurity

Software-defined perimeter transmissions also guard information at the data layer by utilizing Datagram Transport Layer Security (DTLS) encryption and Public Key Authentication. Fortifying information assets at the data layer is likely the most dependable method of protecting them, because it's the layer in which the data are actually stored. It's important to distinguish data layer security versus access layer security. The latter involves a process known as security filtering in which, based on particular roles or responsibilities, users can access data. "You can specify filters where for a particular user or a particular role whether you could see or not see particular [data]," Franz CEO Jans Aasman said. "You could say if someone has the role administrator, we're telling the system 'administrators cannot see [certain data]'."

Moreover, triple attributes can be based on compliance needs specific to regulations — which is immensely utilitarian in

the post-GDPR data landscape. "For the government you could have a feature of whether you're a foreigner or not," Aasman said. "HIPAA doesn't care whether you're a foreigner or not, but you can do a separate mechanism for it."

2020 Trend Setting Products — AllegroGraph

Franz Inc. is proud to announce that it has been named to the 2020 Trend Setting Products in Data Management by Database Trends and Application Magazine.

Database Trends and Applications (DBTA) magazine announced its seventh annual list of trend-setting products in data management and analysis. The list, "DBTA Trend-Setting Products for 2020," recognizes products in the marketplace that are both innovative and effective in helping customers address evolving challenges and opportunities. In all, 100 products are highlighted in the special December edition of *Database Trends and Applications* magazine and on the DBTA website, www.dbta.com.

"The world of data management and analytics continues to evolve rapidly with new technologies and strategies," remarked Thomas Hogan, Group Publisher of *Database Trends and Applications*. "Cutting through the hype and identifying products that deliver results in the real world is more important than ever. This list highlights products that are truly transformative in bringing greater agility, efficiency and innovation to market."

"We are honored to receive this acknowledgement for our efforts in delivering Enterprise Knowledge Graph Solutions," said Dr. Jans Aasman, CEO, Franz Inc. "In the past year, we have seen demand for Enterprise Knowledge Graphs take off across industries along with recognition from top technology analyst firms that Knowledge Graphs provide the critical foundation for artificial intelligence applications and predictive analytics. Our AllegroGraph Knowledge Graph Platform Solution offers a unique comprehensive approach for helping companies accelerate the creation of Enterprise Knowledge Graphs that deliver new value to their organization."

Loving Common Lisp, or the Savvy Programmer's Secret Weapon

This is the fifth edition (released September 2019) of Mark Watson's "Loving Common Lisp, or the Savvy Programmer's Secret Weapon."

From the website — "I removed some of the older material from the earlier editions and added application examples for deep learning, back-propagation and Hopfield neural networks, using the CLML machine learning library, heuristic search, and using Common Lisp clients for: MongoDB, Solr, and relational databases. For the older 3rd edition I added a chapter using my Natural Language Processing (NLP) library and a short chapter on information gathering. For the 5th edition I added an example application for generating Knowledge Graph data (RDF and Cypher for Neo4j graph database), and hybrid examples

for using Python deep learning libraries (using a web service interface).

The purpose of this book is to provide a quick introduction to Common Lisp and then provide the user with many fun and useful examples for using Common Lisp.

Link to the Book

AllegroGraph — KMWorld Readers Choice Finalist

KMWorld 2019 Readers' Choice Awards: Best Knowledge Graph

AllegroGraph — Finalist

The ability for knowledge graphs to amass information and relationships and connect those facts allows companies to find context in data, which is important for extracting value as well as complying with new data regulations.

The concept of the enterprise knowledge graph (EKG) is fairly new and made possible by machine learning and big data technologies, including automated text analysis and graph engines, explained analyst Amy Stapleton in an Opus Research article. "An IA [intelligent assistant] that taps into an EKG can infer the context and intent of questions, generate direct answers, make recommendations, and automatically expand its understanding as the knowledge graph adds new content," she noted.

KMWorld Readers Choice

Big Data 50 — Companies Driving Innovation in 2019

Franz Inc. is proud to announce that it has been named to Database Trends and Application (DBTA) – Big Data 50, Companies Driving Innovation in 2019

Today, more than ever, businesses rely on data to deliver a competitive edge. The urgency to compete on analytics has spread across industries, fueled by the need for greater efficiency, agility and innovation," remarked Thomas Hogan, Group Publisher at Database Trends and Applications. "This list seeks to highlight those companies that are really driving innovation and serve as a guide to businesses navigating the rapidly changing big data landscape."

A new generation of tools is making it possible to leverage the wealth of data flowing into organizations from a previously unimaginable range of data sources. Machine learning, AI, Spark, and object storage are just some of the next-generation approaches gaining traction, according to recent surveys conducted by Unisphere Research, a division of Information Today, Inc.

But, it is also increasingly clear that there is no single way

to approach data-driven innovation today. Open source-based technologies have gained strong adoption in organizations alongside proprietary offerings, data lakes are increasingly being implemented but data warehouses continue in widespread use, and hybrid deployments spanning cloud and on-premise are commonly accepted.

Organizations are seeking to use data-driven innovation for better reporting and analytics, real-time decision making, enhanced customer experience and personalization, and reduced costs. But with data coming in from more places than ever, being stored in more systems, and accessed by more users for a wider array of use cases, there is greater recognition that security and governance must be addressed intelligently.

Evaluating new and disruptive technologies, and then identifying how and where they can be useful, can be challenging.

To contribute to the discussion each year, Big Data Quarterly presents the "Big Data 50," a list of forward-thinking companies that are working to expand what's possible in terms of capturing, storing, protecting, and deriving value from data.

"We are honored to receive this acknowledgement for our efforts in delivering Enterprise Knowledge Graph Solutions," said Dr. Jans Aasman, CEO, Franz Inc. "In the past year, we have seen demand for Enterprise Knowledge Graphs take off across industries along with recognition from top technology analyst firms that Knowledge Graphs provide the critical foundation for artificial intelligence applications and predictive analytics. Our AllegroGraph Knowledge Graph Platform Solution offers a unique comprehensive approach for helping companies accelerate the creation of Enterprise Knowledge Graphs that deliver new value to their organization."