The Rise of Language-Centric Analytics

The Gap Between Promise and Reality

In the last couple or so years, we all witnessed the widespread adoption and advancement of Large Language Models (LLMs), I couldn't help but think about the profound implications for the world of analytics and the evolving role of the data or business analyst. With each breakthrough in natural language processing, I found myself increasingly intrigued by the transformative potential of these technologies. However, as I got deeper into current use cases of LLMs and Generative AI, I couldn't avoid the feeling that something was missing.

While the capabilities demonstrated by these models were undeniably impressive, they often seemed disconnected from the practical realities of business. All too often, the examples and applications touted by enthusiasts and experts alike felt generic and detached, leaving many to wonder, "Is this truly relevant to me?" I mean, really. Think about it: how many companies do you know that really need an AI to generate specific content for their customers? How many will in fact need or apply chat bots for customer support? How many will use Generative AI to automatically generate image for its products? Based on my experience and research: very few. It became apparent that regardless the hype and excitement surrounding LLMs, there is a grand-canyon size gap between the promise of these technologies and their real-world applicability for the majority of businesses.

Language is Natural

That is where it just clicked to me this term that I am now crafting, after long thought, discussion, and several tests: **Language-Centric Analytics**. The role of Language Models in Analytics is not at the end of a process to add a "cool" almost useless feature but at the center of the whole process. The reason for that is simple: Language is Natural (pun intended). Language is how most of us communicate with one another. Do you know what is not natural? Mouse, clicks, double-clicks, drag and drop. I could spend hours talking about the philosophical and social implications of this change, but let's focus on a more practical approach: what, why, and how.

What

Language at the center of analytics

Why

Natural communication

How

Practical applications

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A Paradigm Shift of Great Proportions

In the rapidly evolving world of data analytics, the emergence of **Language-Centric Analytics** is doomed to cause a paradigm shift of great proportions. As we stand at the precipice of this transformative era, it is important to explore in depth the implications, applications, and potential of this groundbreaking approach. From reimagining the role of the analyst to revolutionizing how we interact with data, Language-Centric Analytics promises to reshape the very fabric of analytics as we know it. Maybe too much? Maybe it is just the hype talking, but all the experiments and discussions I am having point to this direction.

Implications

Transforming analyst roles

Applications
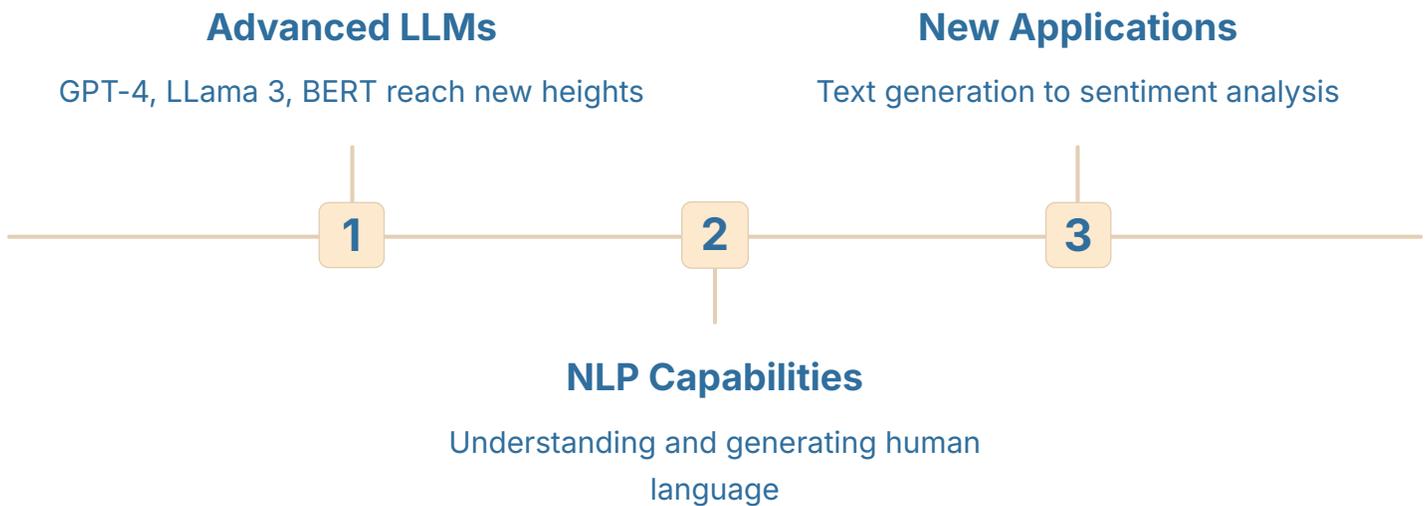
New ways to interact with data

Potential

Reshaping analytics

Why Only Now?

The answer is simple: we were not ready before.

The genesis of Language-Centric Analytics can be traced back to the convergence of two pivotal trends: the proliferation of advanced Large Language Models (LLMs) and the growing recognition of the centrality of language in human-computer interaction. With the advent of state-of-the-art language models such as **GPT-4 from OpenAI LLama 3 from Meta**, and **BERT from Google**, the capabilities of natural language processing (NLP) have reached unprecedented heights. These models boast remarkable proficiency in understanding, generating, and manipulating human language, opening up new frontiers in applications ranging from text generation to sentiment analysis.

Advanced LLMs
GPT-4, LLama 3, BERT reach new heights

1

NLP Capabilities
Understanding and generating human language

2

New Applications
Text generation to sentiment analysis

3

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Reimagining the Analytical Workflow

At its core, **Language-Centric Analytics** reimagines the analytical workflow, placing language as the central and starting point of inquiry. Unlike traditional approaches that prioritize predefined dashboards or static reports, Language-Centric Analytics empowers users to interact with data in a more intuitive, conversational manner. Picture a scenario where an analyst initiates an analytical inquiry by posing a question in natural language or engaging in a dialogue with a virtual assistant. This fluid and dynamic interaction, facilitated by advanced language models, heralds a new era of data exploration and discovery.

Traditional Approach

Predefined dashboards and static reports

Language-Centric Approach

Intuitive, conversational interaction with data

The Result

Fluid, dynamic data exploration and discovery

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Contrasting Analytics Paradigms

To appreciate the significance of Language-Centric Analytics, it is instructive to contrast it with two prevailing paradigms: **Dashboard-Centric Analytics** and **Report-Centric Analytics**. In Dashboard-Centric Analytics, the emphasis is placed on visually appealing dashboards that provide users with a snapshot of key metrics and trends. While dashboards offer a convenient way to access and visualize data, they are inherently limited by the preconceived notions and biases encoded into their design. Similarly, Report-Centric Analytics revolves around curated reports that encapsulate insights and analyses derived from data. While reports offer a more comprehensive narrative, they often lack the flexibility and interactivity of Language-Centric Analytics.

Dashboard-Centric

Visual snapshots of metrics

- Convenient access
- Limited by design biases
- Static visualization

Report-Centric

Curated insights and analyses

- Comprehensive narrative
- Lacks flexibility
- Limited interactivity

Language-Centric

Conversational data interaction

- Intuitive and flexible
- Dynamic exploration
- Natural communication

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The Center of Mass

When I say "centric", what I mean is the center of mass where the other concepts and resources gravitates around it. Imagine this example: an analyst who primarily works with Revenue data. Just like any business professional, this person needs data. In a more traditional approach, the analyst receives a report or one a specific dashboard app to access Revenue data. In a **Language-centric approach**, this user can start by talking to an AI assistant who will provide the main KPI data verbally and point the analyst to the proper dashboard for a detailed analysis. This user could also start by going to a business term glossary, finding all resources (apps, machine learning models, reports) associated with the term Revenue.

Traditional Approach

01

Analyst receives report or dashboard

02

Access Revenue data through fixed interface

03

Limited to predefined views

Language-Centric Approach

01

Talk to AI assistant for KPI data

02

AI points to proper dashboard

03

Access glossary for all Revenue resources

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Transforming Development and Platforms

The developers of those resources can also adopt the language-centric paradigm. Instead of focusing on specific charts and metrics, they start by defining the terms, and crafting the application vocabulary and logic model. That forces the developers to think in terms of business questions instead of mere data models and visualizations. It brings them closer to the analysts and, not surprisingly, improves communication and brings the company to a more data-mature level.

The advent of platforms like the **Qlik cloud platform** further accelerates the adoption of Language-Centric Analytics. With features such as Qlik Insight Advisor, Glossary, Key Drivers, Qlik AutoML, and Qlik Automation, users are equipped with a comprehensive suite of tools tailored to the language-centric approach. Qlik Insight Advisor, for instance, leverages natural language processing to enable users to interact with data through conversational queries, while the Glossary serves as a centralized repository of business terms and definitions. Moreover, Qlik AutoML empowers users to enrich language-centric datasets, enhancing the depth and contextuality of analyses.

Qlik Insight Advisor

Conversational queries with NLP

Glossary

Centralized business terms repository

Key Drivers

Identify critical factors

Qlik AutoML

Enrich language-centric datasets

Qlik Automation

Streamline workflows

Furthermore, by interfacing with leading language platforms such as **HuggingFace** and **OpenAI GPT** via APIs, Qlik expands the horizons of Language-Centric Analytics, enabling seamless integration with state-of-the-art language models. These partnerships unlock a wealth of possibilities, from sentiment analysis to text summarization, empowering organizations to extract deeper insights and drive informed decision-making. Combining these API interfaces with Automation and AutoML, data engineers, developers, and scientists can add textual context to the data to make the Centric-language analytics a reality. For example, a given number increase is not necessarily good. If it is number of complaints or cancelations, it has a negative impact in the company. In that scenario, a language question like "What departments improved customer complaints?" will only make sense if you enrich your data by informing textually about the meaning of that particular metric.

> I would like to leave you with the thought that **Language-Centric Analytics** represents a pivotal moment in the evolution of data analytics. By foregrounding language as the primary conduit for analytical inquiry, organizations can unlock new dimensions of insight, agility, and innovation. As we embark on this transformative journey, the role of the analyst evolves from mere data interpreter to strategic navigator, guiding organizations through the intricacies of the data landscape with clarity and conviction. In embracing Language-Centric Analytics, we embark on a voyage of discovery, charting new territories and unlocking the boundless potential of data-driven insights.

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