Sygnos®

Knowledge Management System

Sygnos

Sygnos is the knowledge graph engine capable to organise complex networks of data inherited with built-in natural logical reasoning and insights discovery

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Sygnos is the knowledge graph engine to organise complex networks of data and making it digestible by performing knowledge engineering. It is a technology that enables businesses to extract sophisticated decision insights and predictive analytics from their highly complex, distributed data that can't be answered with conventional databases.

Unlike traditional relational databases or more recently developed NoSQL databases, Sygnos transforms documents and unifies databases to process data with contextual and conceptual intelligence. Sygnos is able to store information from various datasets with different levels of complexity to support predictive analytics that help companies make better, real-time decisions.

Fast Ingestion and Integration of Data

Sygnos works with any type of data, wherever it comes from. This allows you to create your own semantically rich knowledge graphs by ingesting and integrating extremely heterogeneous text mined output in an intuitive and flexible way.

Contextual Relations and Reasoning

Sygnos enables you to iteratively and quickly contextualise newly generated insights in order to understand how it interacts and connects with all your data sources. Sygnos becomes your unified representation of contextualised Text Mined knowledge.
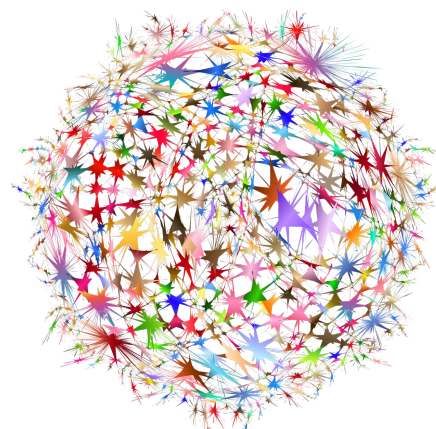
"Sygnos discovers new connections and uncovers hidden insights within your text mined output through its in-built automated deductive reasoning engine. Rather than being a black box, Sygnos gives you full explainability of every single insights contained across text in a scalable and efficient way."

Transforming Texts Into Knowledge

Text is the medium used to store the tremendous wealth of scientific knowledge regarding the world we live in. However, with its ever-increasing magnitude and throughput; analysing this unstructured data has become an impossibly tedious task. This has led to the rise of Text Mining and Natural Language Processing (NLP) techniques and tools as the go-to for examining and processing large amounts of natural text data. Text Mining is the automatic extraction of structured semantic information from unstructured machine-readable text. The identification and further analysis of these explicit concepts and relationships help in discovering multiple insights contained in text in a scalable and efficient way.

Some of the various text mining/NLP techniques include; structure extraction, tokenisation, acronym normalisation, lemmatisation, de-compounding, and identifying language, sentences, entities, relations, phrases and paragraphs. Utilising these techniques, Sygnos stores the entities, concepts, and relationships in its database to unify the information in an entity-centric approach. This transforms unstructured information contained in the texts into a structured graph format that can be processed, stored, and queried with ease.
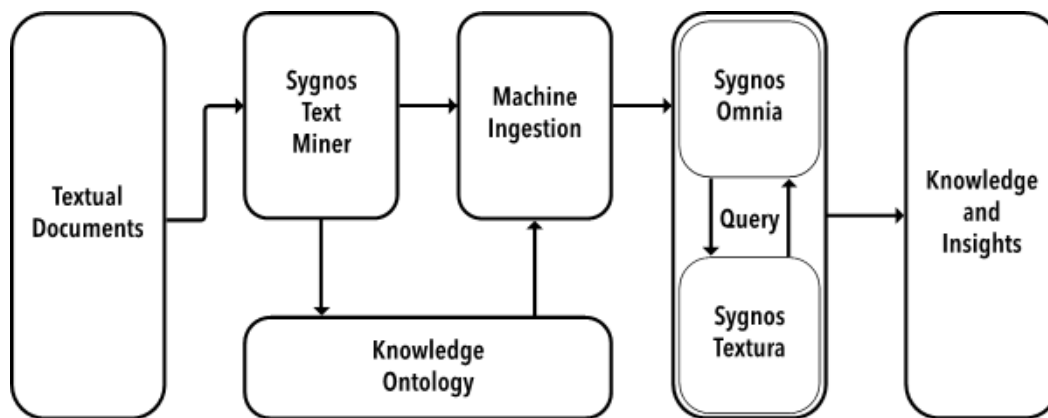
Ontological Structure

The common problems we encounter when dealing with unstructured or loosely structured data are:

- Integrity - when data is weakly tied to any particular structure it is hard or even impossible to control the state and validity of the data. As a result, we have no guarantees on data consistency and validity.

- Accessibility and retrieval - with the lack of any high-level structure comes the lack of possibility to query the data meaningfully. This is either because our data structure is too low level to express complex queries or that handling the complexity of such queries becomes a problem. Consequently, we might be forced to ask simple questions only.

- Maintenance - the problem is directly coupled with the integrity problem. When we have little control over the structure of our data it is hard to alter that structure over time as requirements change. As a consequence, data changes need to be carried out with surgical precision or risk data pollution.

- Deferring Responsibility - starting with loose or no schema only defers the responsibility of schema definition and enforcement in time. In production systems, we cannot afford to lose control over data. If the database doesn't take responsibility for schema definition and enforcement, that means that the schema logic needs to be incorporated at the app level.

Our ontology is the blueprint of a Sygnos knowledge graph. Using a highly flexible language, we define a schema to model a domain true to nature. Highly interconnected data cannot be stored at scale without an underlying structure - one that is capable of expressing the complexity of the dataset is easy to understand and can be extended programmatically, at runtime.

The schema defines a specific, explicit, high-level structure of data that is enforced across the dataset. This allows the database to provide logical integrity guarantees and consistency guarantees for our data. Any attempt to add data not conforming to the defined schema is a schema violation and is not allowed.

A well-constructed schema enables writing intuitive queries. Given such schema, we often find ourselves writing queries that map seamlessly with how we form them as questions in our mind. The schema sets the basis for performing automated reasoning over the represented data. It enables the extraction of implicit information from explicitly stored data - a powerful feature of Sygnos that facilitates knowledge discovery and the implementation of business logic inside the database.

For Further Information, Please Contact:

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