Denodo AI Software Development Kit (SDK)

Accelerating Generative AI Innovation

The Denodo Platform

Generative AI (GenAI) promises to accelerate the development of AI-powered applications and agents across the enterprise. However, data issues are creating friction in development and slowing down innovation. These issues include managing and accelerating data access, ensuring data trust and reliability, and complying with privacy and other regulations. The Denodo Platform solves these issues by providing a unified and trusted data access and delivery layer that abstracts this complexity and frees application developers to focus on AI innovation.

The Denodo Platform leverages AI and GenAI to automate routine tasks for data engineers and consumers, transforming complex data into actionable insights. It establishes a logical data access layer atop all data sources, regardless of where the data resides. This provides secure, timely delivery of high-quality data, empowering business users and/or GenAI LLMs with seamless connectivity to all data. Additionally, it enables security and compliance teams to monitor and manage all data access from a single point of control.

RETRIEVAL AUGMENT GENERATION (RAG) WITH GENERATIVE AI

Retrieval augmented generation (RAG) has become a common design pattern for developing next-generation GenAI chatbots and applications. The Denodo Platform supports the RAG design pattern by providing a single trusted data access layer to the LLM. However, implementing RAG for specific AI-based applications can be a complex, multi-step process. Developers must manually connect to different data endpoints, extract and preprocess data, and carefully merge datasets to ensure accuracy and context. This involves managing a variety of tools, using custom code, and maintaining compliance with security protocols, which, when done manually, makes the process of getting data "AI ready" time-consuming and prone to errors.

Introducing the Denodo AI SDK

The Denodo AI SDK simplifies this process by providing a unified, streamlined interface for accessing and combining data from multiple sources directly through the Denodo Platform. With pre-built APIs, the SDK abstracts away the complexities of connecting, transforming, and merging data, enabling developers to access combined data sets with minimal effort. The SDK's RAG-specific APIs handle data embedding and orchestration, automatically preparing the data for LLM consumption. Security and data governance are also managed within the SDK, so data access and use can comply with organizational policies without additional manual intervention. This seamless integration significantly reduces the need for custom code and manual processes, accelerating the development of AI applications and enhancing the overall reliability of the resulting solutions.

BENEFITS OF USING THE DENODO AI SDK

❚ **Simplifies integration** with multiple data sources, reducing the need for custom connectors and manual data handling.

❚ **Streamlines data transformation** and merging, automatically preparing data for combined analysis and LLM input.

❚ **Reduces orchestration complexity** with pre-built APIs that handle embedding, vectorization, and LLM querying in a single flow.

❚ **Enhances security and governance** by managing access control and compliance within the SDK, minimizing risks.

❚ **Accelerates development timelines** by removing repetitive coding tasks and focusing on higher-value features.

❚ **Improves data accuracy and consistency**, ensuring rich, contextually relevant responses from GenAI applications.

❚ **Supports scalability and flexibility** through open-source components, enabling customization to meet many different use cases.

The AI SDK is available as a Denodo Connect component and receives the same level of support and regular updates as any other Denodo Connect component.

It is compatible with Denodo Enterprise Plus 9.1 or later, as well as the freely downloadable Denodo Express.

KEY FEATURES INCLUDE

❚ **Comprehensive Integration Components**: All necessary components and configuration options to simplify integration with the Denodo platform.

❚ **Session-Level Security**: Standard Denodo Platform access controls, including basic authentication and authorization, applies to all queries performed and all data retrieved.

❚ **Streamlined LLM Integration**: Easy integration with popular commercial off-the-shelf (COTS) large language models (LLMs) through configuration parameters.

❚ **Vector Database**: The SDK offers a number of options in terms of vector database support, including the use of an embedded vector database as well as support for several external ones.

❚ **Example Front-End Application/Chatbot**: A sample application provided to assist with testing and custom developments, enhancing the user experience during implementation.

❚ **RESTful APIs**: Specifically designed for developing RAG-based AI agents, these APIs cover multiple stages of the development lifecycle, abstracting lower-level APIs and orchestration logic. The outputs of these APIs are specially formatted as JSON files, to facilitate integration with embedding APIs and vector databases.

❚ **API calls, which include**:
  - **Retrieve Metadata from VDP Databases**: This API call retrieves metadata from a specified Virtual DataPort (VDP) database and returns it in both JSON and natural language formats for easier interpretation and analysis. (API: getMetadata)
  - **Answer Data Question**: This API call enables users to submit a natural language query about data managed by the Denodo Platform and receive both a natural language response and the underlying SQL query used to generate the answer. It is the primary endpoint for answering questions based on your data. (API: answerdataQuestion)
  - **Answer Meta Data Question**: This API call enables users to query the metadata managed by the Denodo Platform using natural language. (API:answermetadaquestion)

PREREQUISITES FOR DOWNLOADING AND USING THE DENODO AI SDK

Either Denodo Express or Denodo Enterprise Plus.