Fraunhofer FIT

Fraunhofer Institute for Applied Information Technology FIT

Connecting Enterprise Data with LLMs | Ensuring Factual Accuracy, Updateability and Provenance | Unlocking New Possibilities

Cognitive Conversational Assistants Powered by Knowledge-Enhanced Large Language Models

Fraunhofer FIT is your trusted partner for developing cutting-edge cognitive conversational assistants, a.k.a. co-pilots. We harness the power of Knowledge Graphs (KGs) and Large Language Models (LLMs) in a seamless integration. By leveraging the structured knowledge representation of KGs and the natural language proficiency of LLMs, we are at the vanguard of creating assistants that excel in comprehending context, delivering precise information, and engaging in dynamic, human-like dialogues.
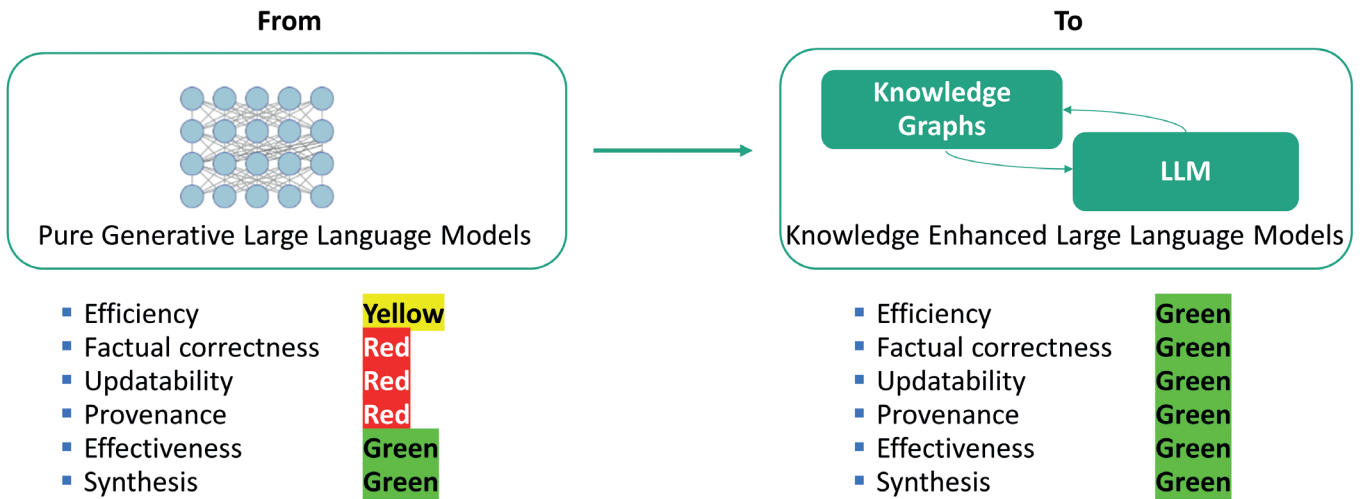
Technology Offerings

LLMs such as ChatGPT are transforming the way we communicate with computers, enabling tasks like question answering, machine translation, text generation, and even code generation. However, their limitations, i.e., hallucination, lack of provenance, expensive knowledge update, have been a significant challenge.

At Fraunhofer FIT, we've developed a **solution** to these limitations by separating LLMs into two components: a knowledge store and linguistic capabilities. This approach allows us to exploit the complementary strengths of each component, resulting in a more flexible and adaptable LLM architecture that can incorporate business knowledge as needed.
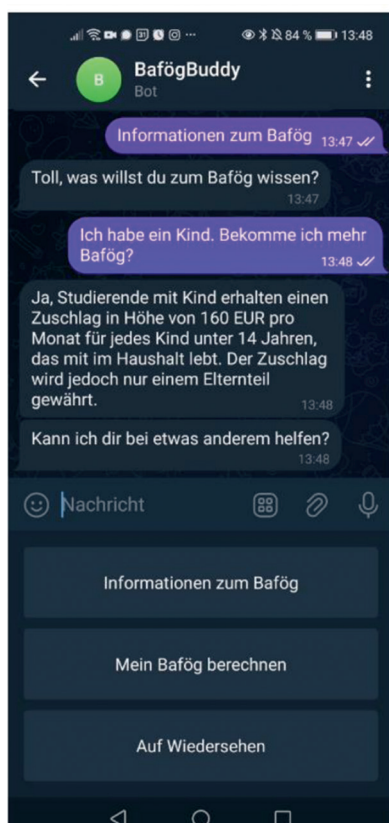
We use KGs as the foundation of our knowledge store due to their remarkable ability to drive agile knowledge integration. KGs enable us to apply logical rules and reasoning to leverage the collective expertise of an organization's subject matter experts for improved reasoning and knowledge discovery.

From

Pure Generative Large Language Models

To

Knowledge Enhanced Large Language Models

	From	To
Efficiency	Yellow	Green
Factual correctness	Red	Green
Updatability	Red	Green
Provenance	Red	Green
Effectiveness	Green	Green
Synthesis	Green	Green

Shift from pure Generative Large Language Models to Knowledge Augmented Language Models with Fraunhofer FIT

Our services

1. Knowledge Graph Construction: We offer comprehensive support to companies in their journey towards constructing their knowledge graph.

2. Interfacing KGs and LLMs: We employ cutting-edge techniques to facilitate a robust and dynamic interface between these two essential technologies.

3. Fine-tuning LLMs: We are dedicated to helping companies fine-tune LLMs for domain-specific tasks.

4. Connecting Tools: We specialize in connecting various tools to LLMs, with a particular emphasis on conversational interfaces.

5. Validation, Analysis, and Benchmarking LLM Outputs Using KGs: We assist organizations in ensuring the accuracy and reliability of LLM-generated content by validating it against the structured knowledge stored in KGs.

6. KGs at Each Stage of the LLM Lifecycle: We are actively engaged in groundbreaking innovation in the construction of LLMs powered by KGs during data preparation, pretraining, adaptation and evaluation.

Demonstrator

1. BAföG Buddy: A specialized conversational assistant designed to provide initial advice for BAföG-related questions.

2. Talk with the LLM Ecosystem: A demonstrator that enables users to seamlessly inquire about various Large Language Model (LLM) models, their specific characteristics, and the companies responsible for their development.

Contact us for a live demo.

Contact

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