Evolving PITON: AI-Driven Conversations with IoT Data

AI Roundtable: Artificial Intelligence and Machine Learning in Defense & Industry
Our Goals

Plug & Play Platform
- Easily Deploy and Manage Sensors
- Automatically collect and curate real-time data
- Access and Share data
- Implement Workflow Automation

No-Code Applications
- Smart City
- Environment
- Smart Agriculture
- Smart Farm
- Smart Building
Smart Agriculture
Empowering ENC Farmers through IoT

Automating Farming Workflows

Want to learn more?
Air Quality Management

Impact $770,00

Project managed by Sinan Sousan
Facilities Management

Predictive Building Management

Project led by Carol Massarra
Meet, Crag

Conversational Retrieval-Augmented Generation

CRAG, empowers subject matter experts and communities with streamlined access to big data queries, simplifying complex information retrieval through its advanced, conversational natural language interface.
Crag: RAG Concept

RAG: Retrieval Augmented Generation

Embeding Model → Database Context Runnable → LLM

Retreival Augmented Query → Answer

Question → JSON

Crag

Powered by PITON
Crag: Fine Tuning

Fine Tuning: Adjusting the parameters of a pre-trained LLM to a specific task

Pre-Trained LLM

Feed our expectations to the generic model

eg. gpt4, gpt3.5

“Hello World”
Crag: Retrievers

Retrievers: Executable code intended to collect, organize and present LLM-consumable information

Database Context Runnable

- if (database):
  - return database.all_data()

- if (database):
  - return database.query_data(query)

- if not (database):
  - return database.connect()

PITON Database
Crag: Prompt Engineering

Prompt Engineering: Strategically crafting inputs to guide a LLM in producing specific and more effective responses for a given task.

Pre-Trained LLM

"Your name is Crag, your role is to assist users" → LLM → "Hello World, I'm Crag"

eg. gpt4, gpt3.5
Water Level User

Getting Started
Start chatting with Crag by typing your question in the text field and clicking "Chat" or pressing Enter.

Crag remembers your conversation within this session for seamless follow-ups, though chats are not saved afterwards for your privacy.

Climb on!

Meet, Crag

Hello, I'm Crag! How can I help?

Insert your question here...
Air Quality User

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Climb on!
Thank you!
popoviciuc18@ecu.edu

More Information about PITON
Center for IoT Engineering and Innovation and Innovation

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