

Exploration and practice of applying DeepSeek to marine disaster prevention and control along China's coast

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RESUME

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information system research and development

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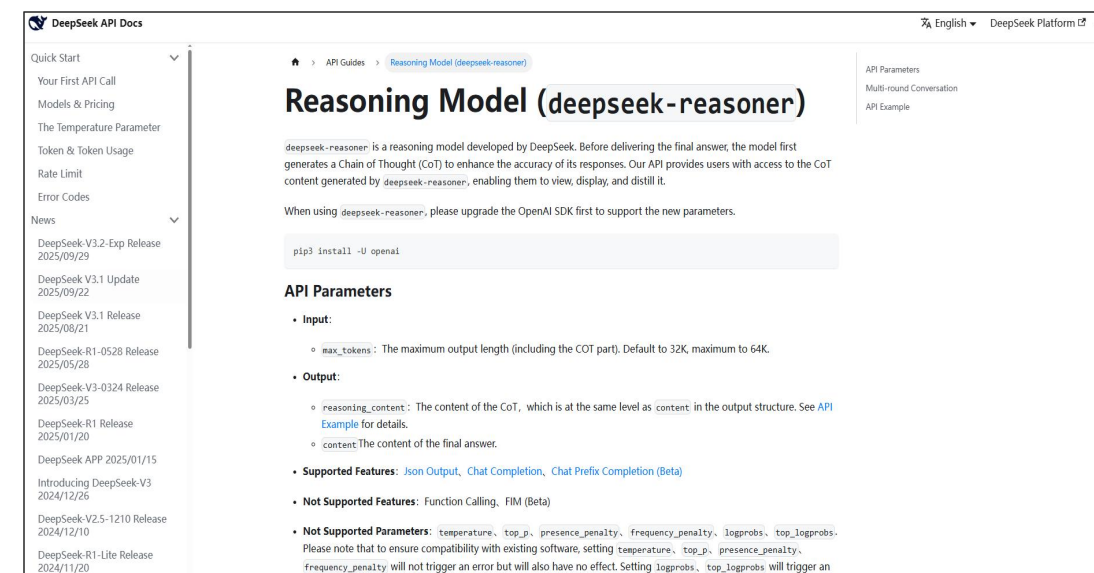
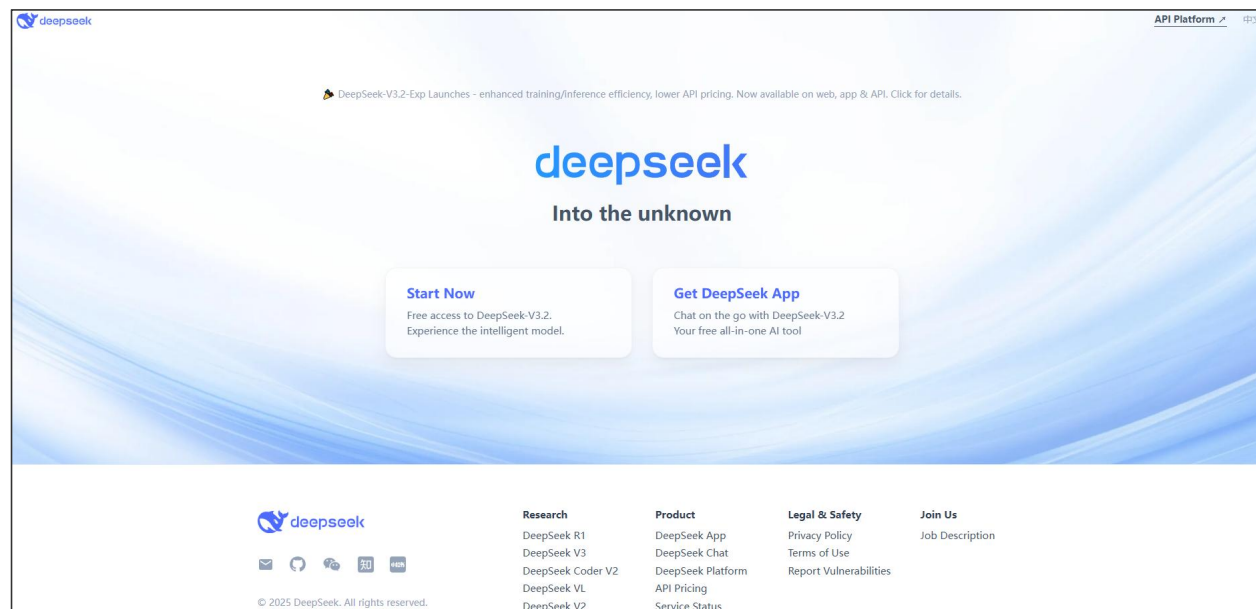
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What's **DeepSeek**

What's DeepSeek

<https://www.deepseek.com/>



DeepSeek is an AI assistant

Launched by *DeepSeek AI Basic Technology Research Co., Ltd. (Hangzhou, China)*

It was officially launched on **January 15, 2025**



What's DeepSeek

DeepSeek

Large Language Model (LLM)

Low cost

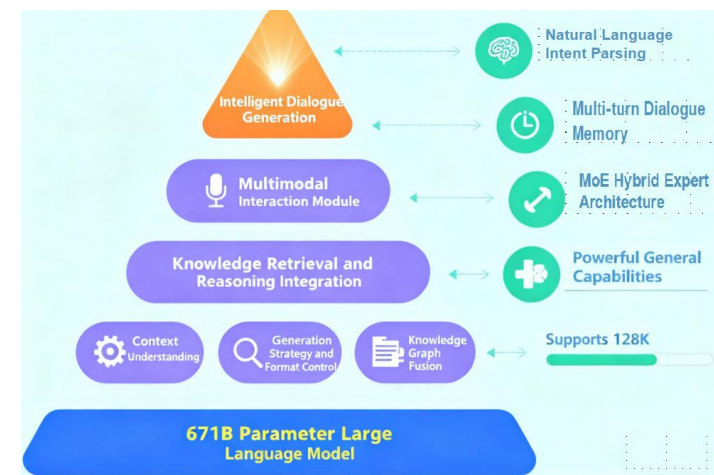
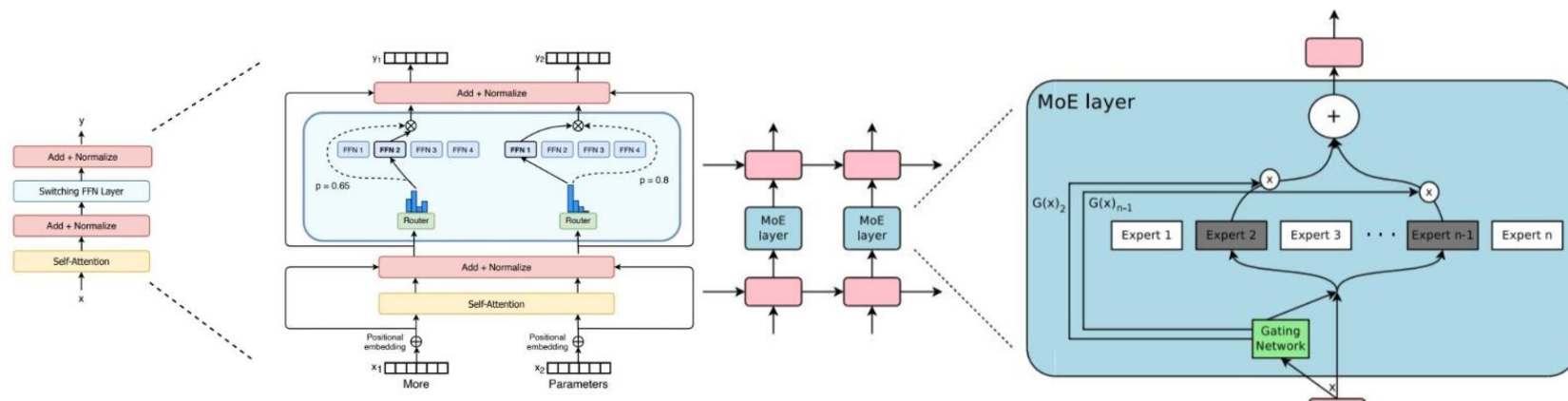
High performance

Perfectly adapted to the Chinese language context

Parameter scale: 671 billion

API call fees: 0.5 CNY per million input tokens (cache hit), 2 CNY per million input tokens (cache miss) & 8 CNY per million output tokens

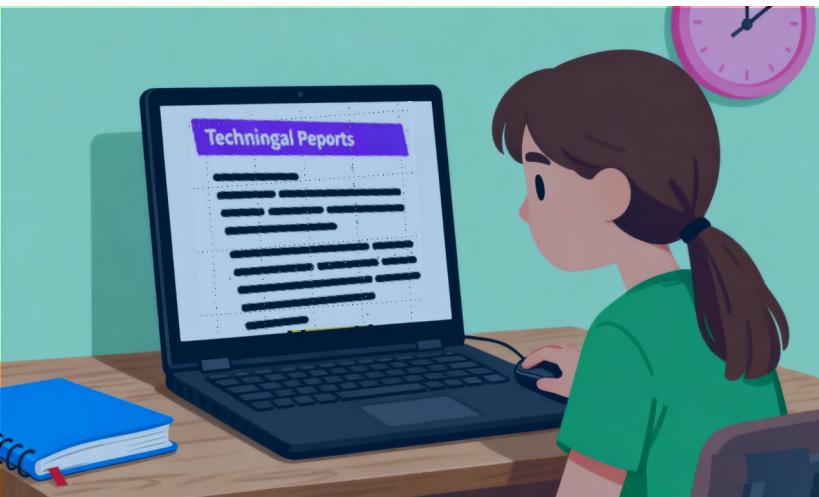
Core technology architecture: Mixture of Experts Architecture (MoE)



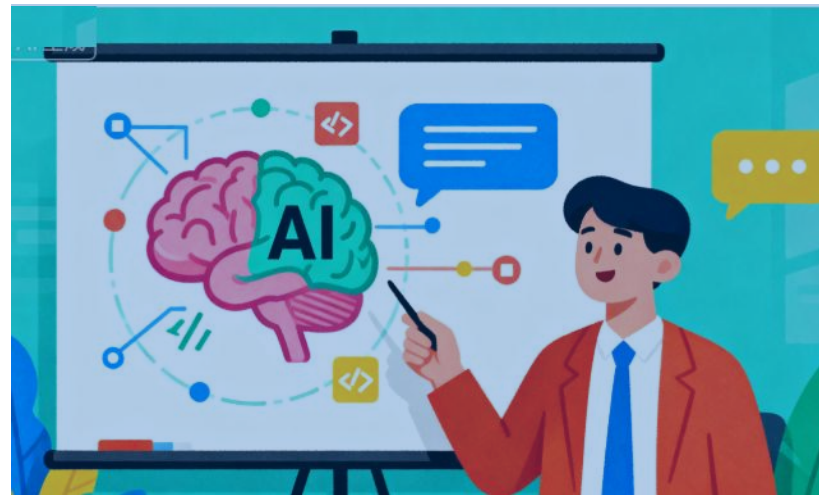
How can we use DeepSeek

How can we use DeepSeek

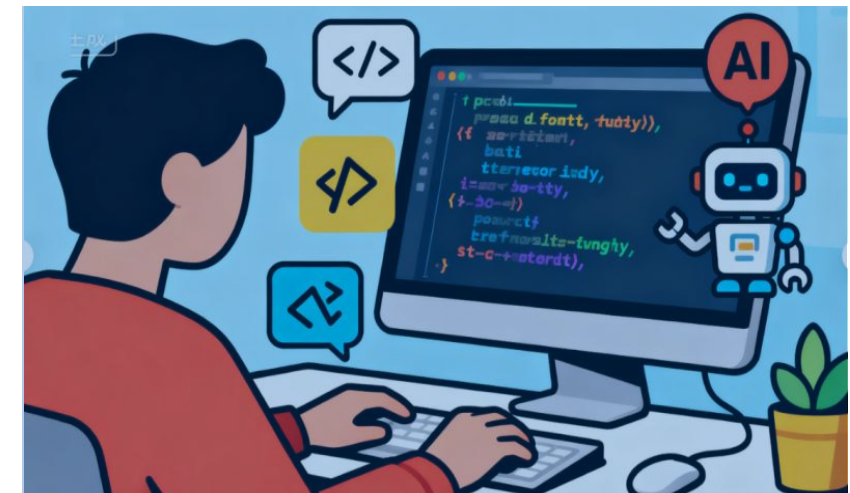
1. **It** can become our **work assistant**



Write technical reports



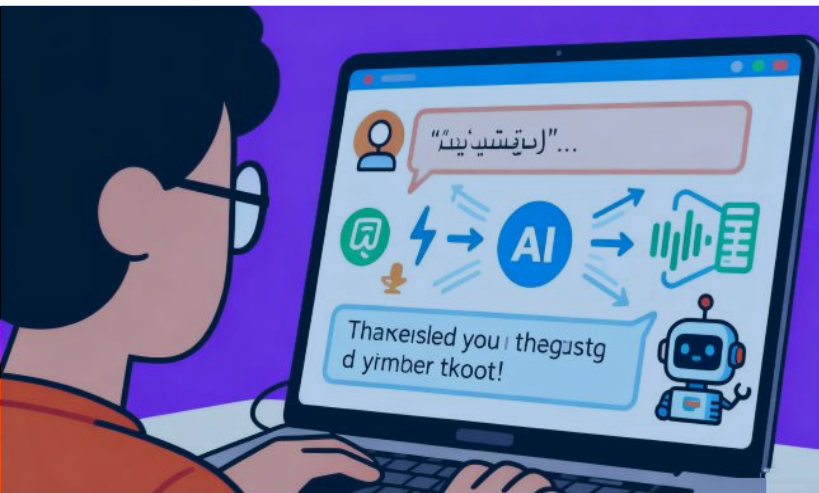
Make presentations



Write program code

How can we use DeepSeek

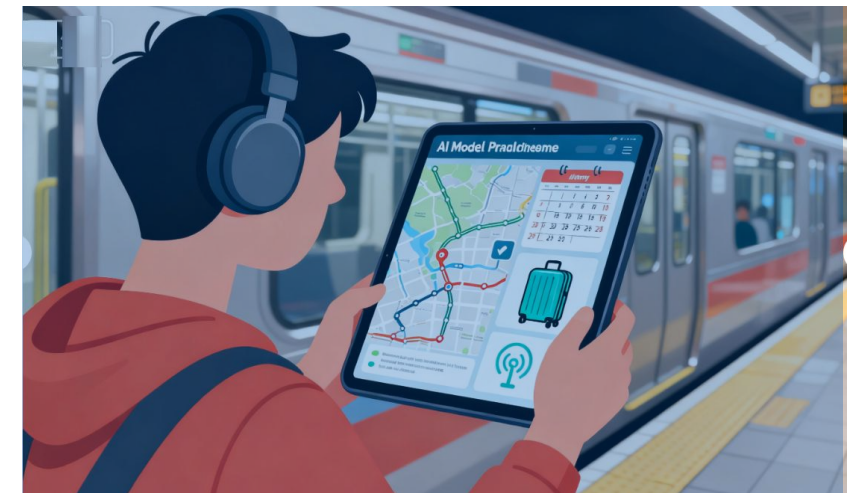
2. **It** can also become our **life assistant**



Language translation



Search for life-related information

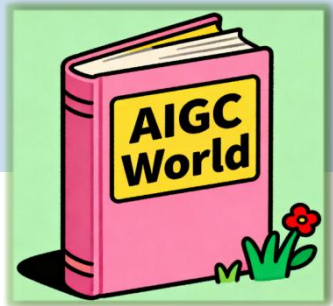


Formulate travel plans

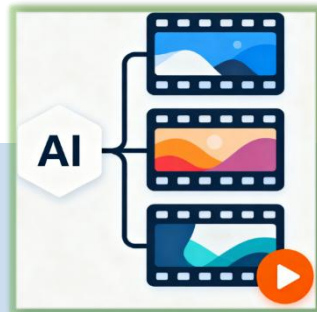
How can we use DeepSeek

DeepSeek's capabilities are derived from **AIGC**:

AIGC (Artificial Intelligence Generated Content) refers to the application of artificial intelligence technology in generative content creation.



Text



Video



Image



Code

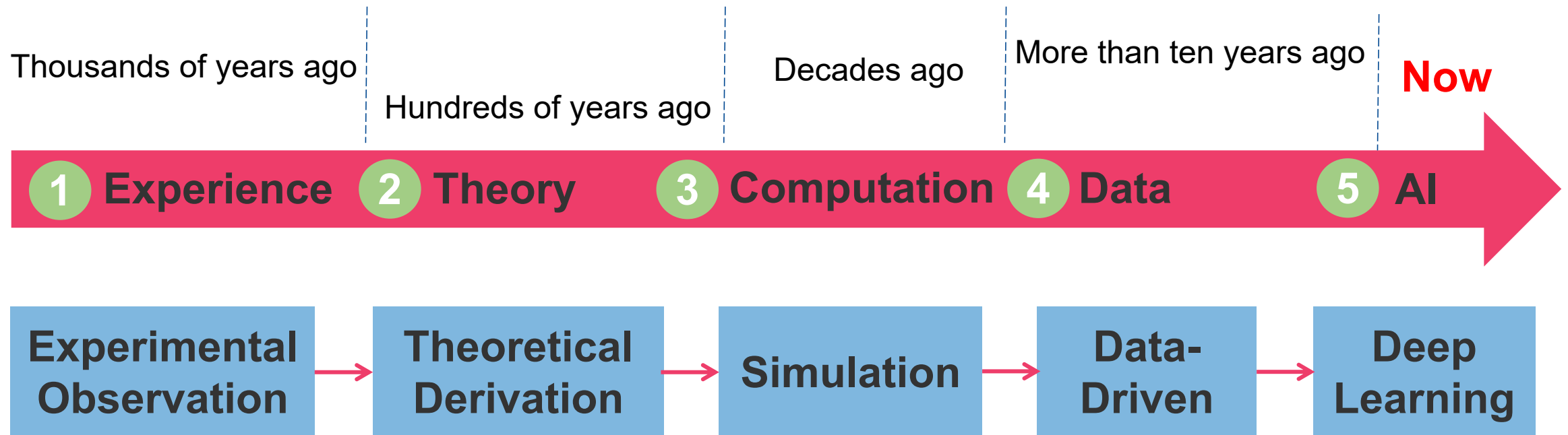


Audio

How can we use DeepSeek

AI for Science:

Large models and generative AI drive **the fifth paradigm** of scientific research.



What are we doing now

What are we doing now

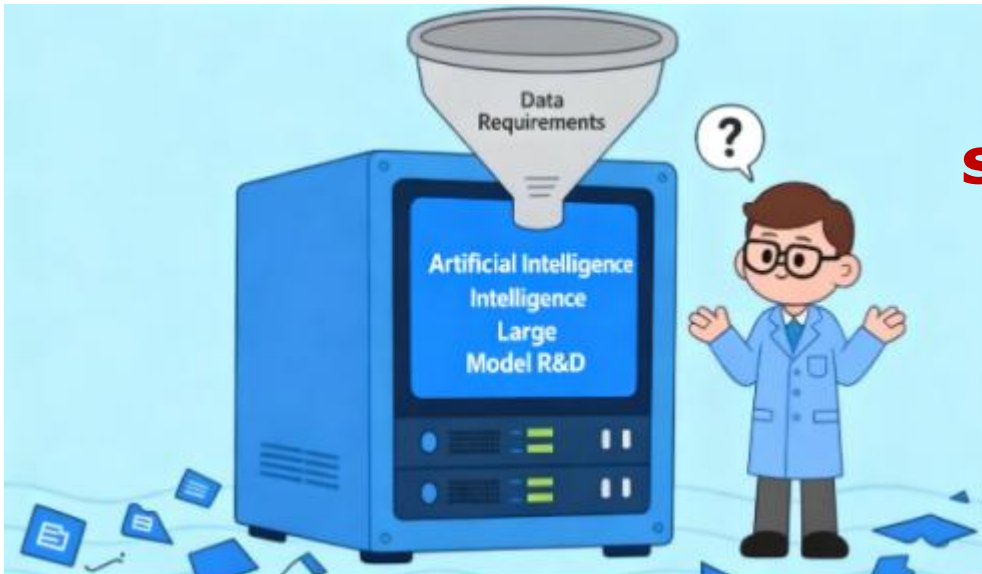
1. Constructing **a high quality instruction fine-tuning dataset** for intelligent prediction of marine disasters with **AIGC**



Marine disaster prevention and mitigation involves interdisciplinary integration



Dataset processing incurs high time and labor costs



oceanography
meteorology
geology
social sciences
.....



supply gap

Professional personnel
In-depth involvement
Collection and sorting
Cleaning and annotation
.....

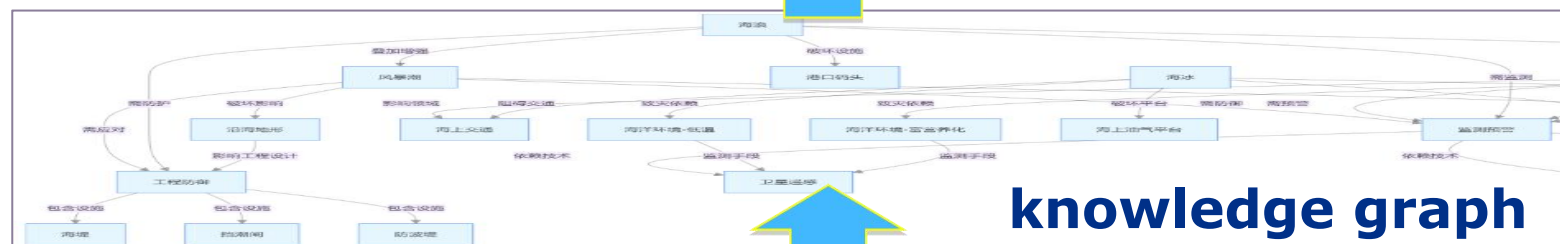


What are we doing now

1. Constructing **a high quality instruction fine-tuning dataset** for intelligent prediction of marine disasters with **AIGC**

```
json {  
  "instruction": "海啸的主要成因有哪些",  
  "input": "针对海洋科普场景",  
  "output": "在海洋科普场景下，海啸的主要成因多与海底及地球圈层的剧烈运动相关，其中最主要的是海底地震—当海底发
```

Q&A dataset (Generated by DeepSeek)



knowledge graph

Book

Literature

News

Report

Standard



Storm surge



Sea fog



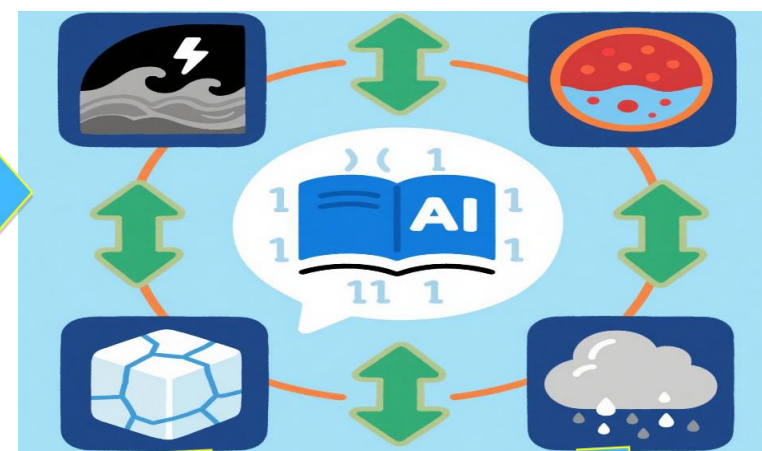
Waves



Red tide



Sea ice



Science Research



Public Welfare Services

What are we doing now

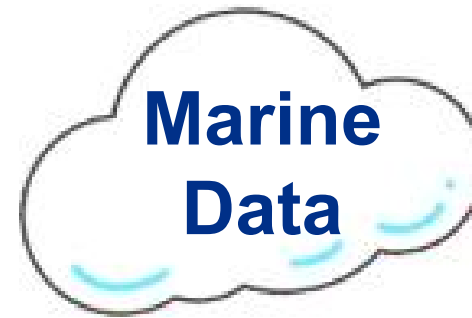
2. Constructing **a spatial visualization agent** for intelligent analysis of marine disasters with **LLM**



Information silo caused by poor conversion compatibility of data sharing and exchange tools



The bottlenecks in data semantic parsing and visual expression are hard to overcome



- Terminology
- Naming convention
- Algorithm model
- ...

- ◆ CHINA: CHINESE
- ◆ JAPAN: JAPANESE
- ◆ USA: ENGLISH
- ◆

LANGUAGE-1



Marine Data

LANGUAGE-2



Marine Data

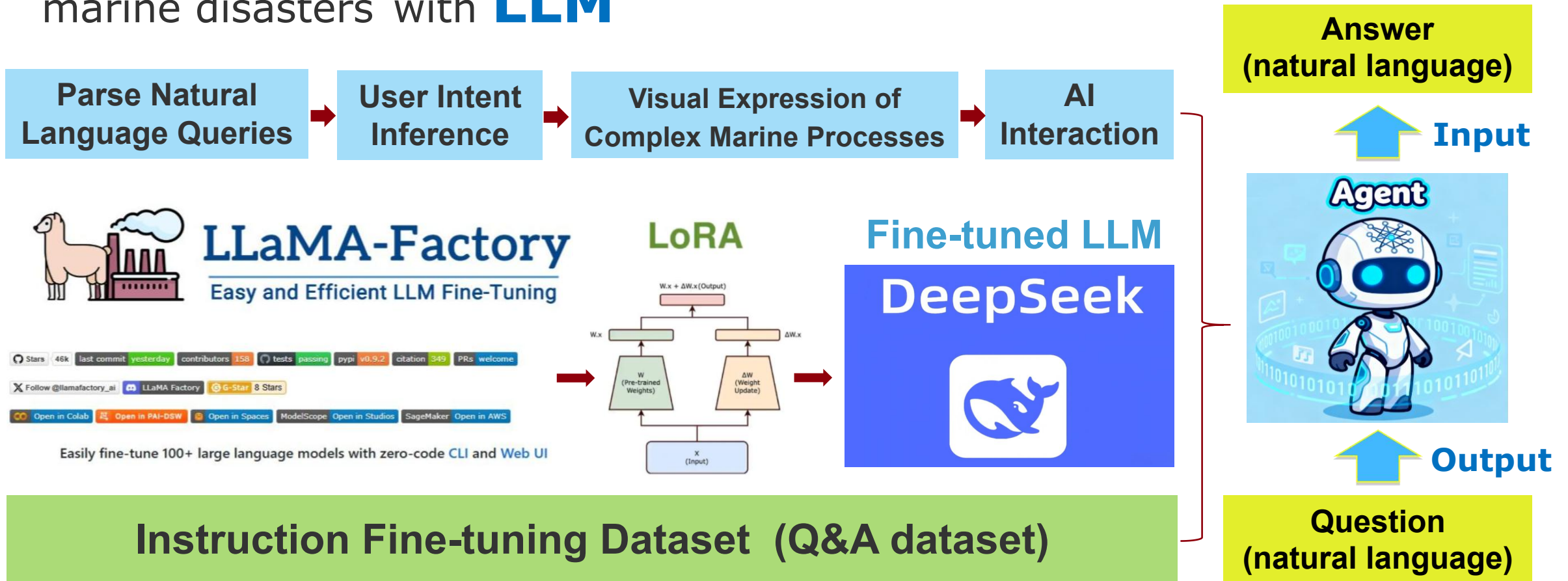
LANGUAGE-3



Marine Data



What are we doing now

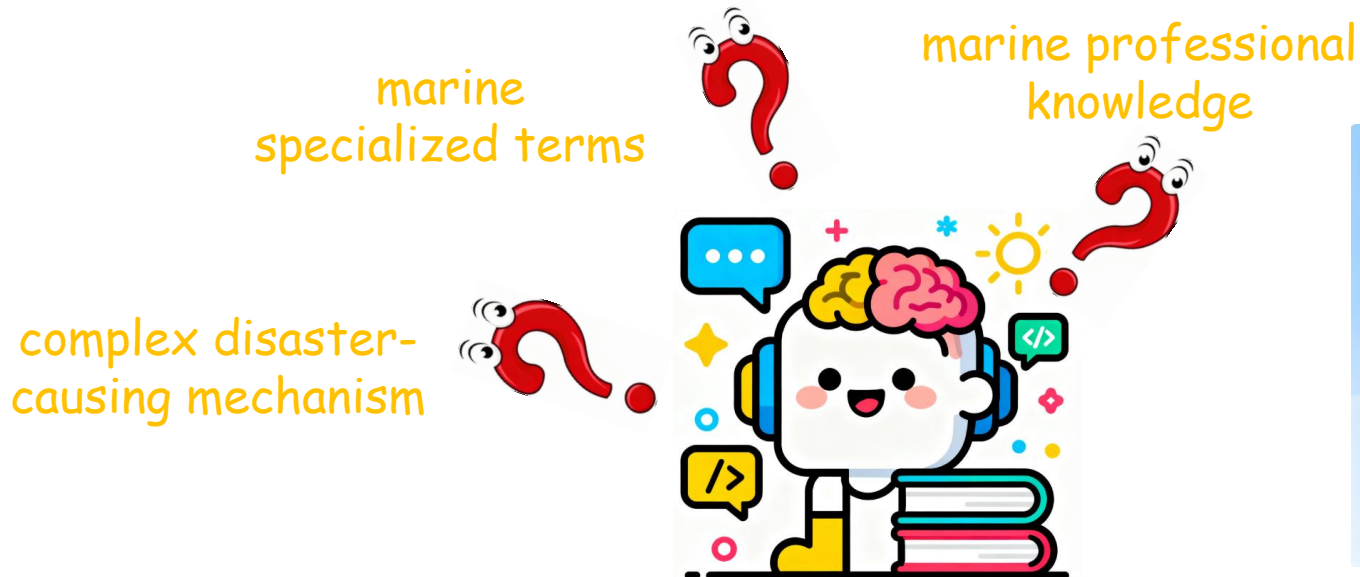
2. Constructing **a spatial visualization agent** for intelligent analysis of marine disasters with **LLM**



What are we doing now

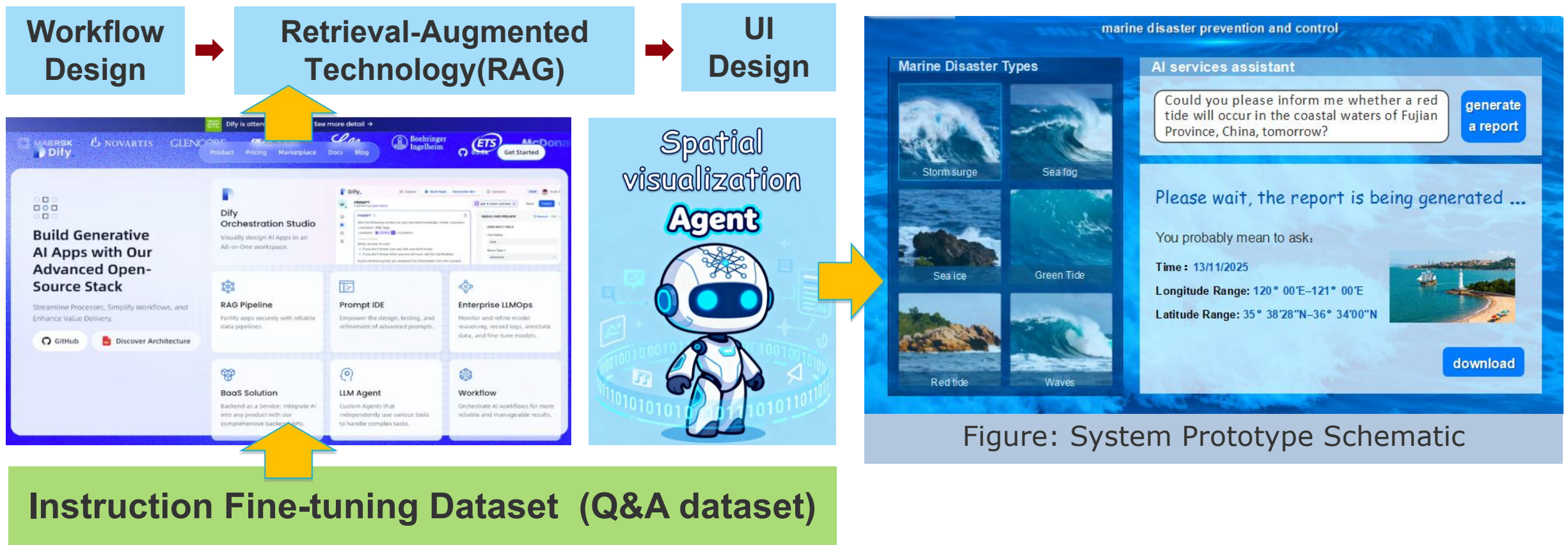
3. Developing **an intelligent Q&A tool** for coastal marine disaster prevention and control in China with **DeepSeek**

-  General LLM lack in professional knowledge in the marine industry, can't understand marine professional terms and complex hazard-causing mechanisms very well
-  Existing Q&A tools lack sufficient accuracy in query results, tend to generate incorrect information, and lack the ability to visually display the marine environment



What are we doing now

3. Developing **an intelligent Q&A tool** for coastal marine disaster prevention and control in China with **DeepSeek**



THANK YOU !



国家海洋信息中心
NATIONAL MARINE DATA AND INFORMATION SERVICE