

LLM & Agent →

打造個人Agent

協作Nextjs全端專案

Hy. Chen

← Next.js App router

NN to Agent

⚠ 巢狀太複雜

專家系統

Expert System

- if - then
- Rule-based

⚠ 無法處理序列性資料

神經網路

Neural Networks

- Input Layer
- Hidden Layer
- Output Layer

⚠ 序列性的處理資料太慢了

深度遞迴神經網路

Deep RNN

- Time Axis
- Depth Axis

機器學習

Machine Learning

- (Un) Supervised Learning
- Reinforcement Learning
- Deep Learning

⚠ 無法處理過於複雜的資料

遞迴神經網路

Recurrent Neural Networks

- BPTT
- Vanishing
- LSTMs

⚠ 梯度消失問題且無法理解抽象語義

⚠ Context Vector太小

Seq2Seq

Sequence-to-Sequence

- Encoder
- Decoder

Transformer (框架)

注意力機制

Attention Algorithm

- Query
- Key
- Value
- **Parallel Computing**

Transformer

Input

- Token
- Vectorization & Embedding
 - High-Dimensional Space
- Positional Encoding
- Attention
- Multi-head
- Contextual Updates

Hidden

- Multilayer Perceptrons

Output

- Unembedding
- Softmax
 - Temperature

GPT - Generative Pre-trained Transformer

RAG

Retrieval-Augmented Generation

1. 資料清洗與切分 Chunking
 2. 向量化 Embedding 與存儲 Vector Database
 3. 精準檢索 Retrieval
 4. 生成 Generation
- Refusal Mechanism
 - Citation

Hallucination

- Retrieval Failure
- Processing Issue

LangChain

Connector

- **Models (模型介面)**
- **Prompts (提示詞模版)**
- **Indexes & Retrievers (資料處理)**
- **Memory (記憶力)**
- **Chains & Agents (鏈與代理)：**
 - **Chain (鏈)**
 - **Agent (代理)**