Learning LangGraph

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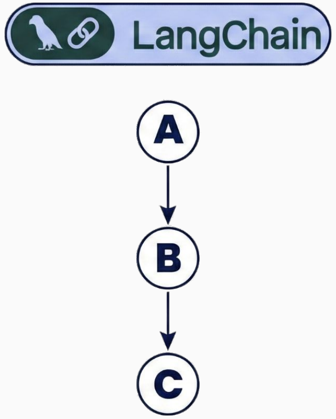
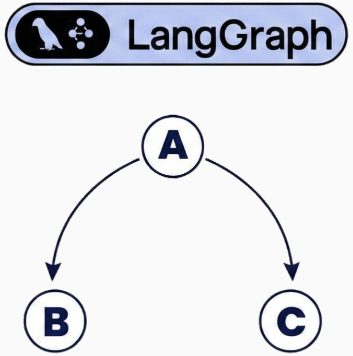
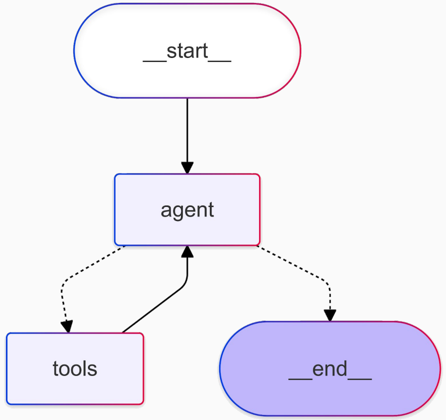
LangChain & LangGraph

LangGraph is part of the LangChain ecosystem, but their structure is inherently different

LangGraph allows us to have **loops** (→ agents with tools)

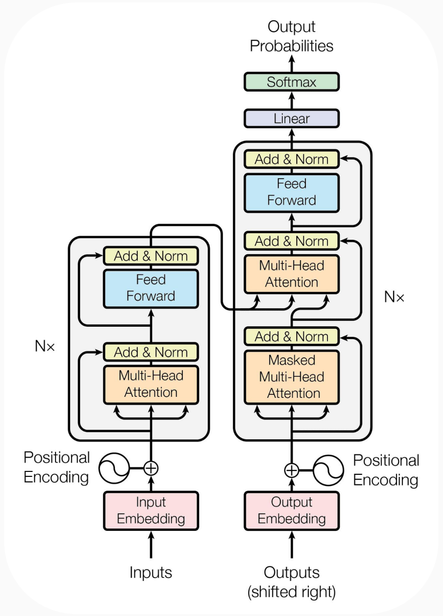


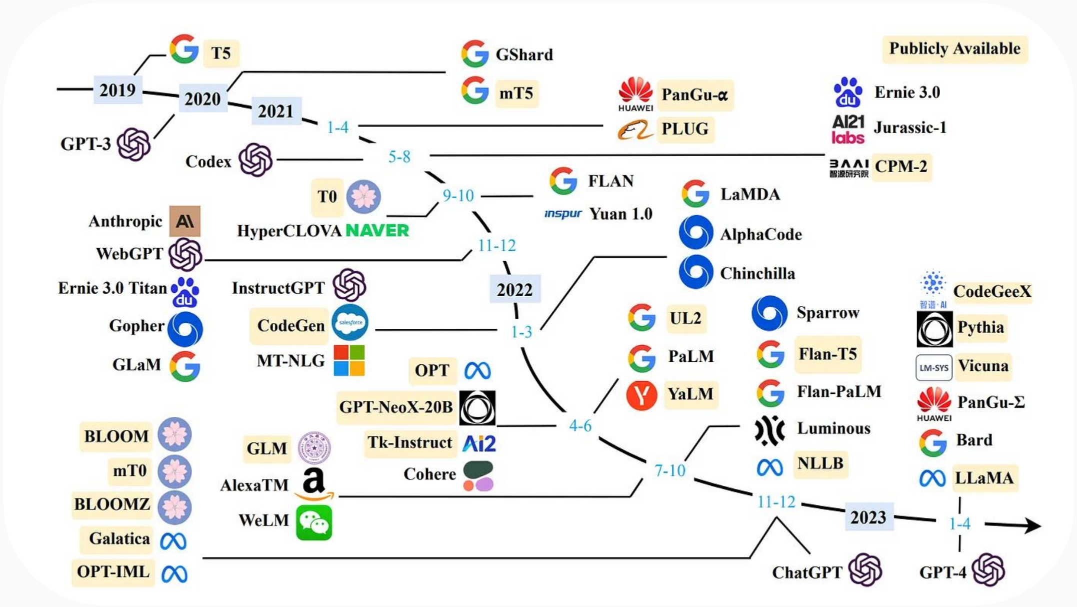




Large Language Models - LLMs

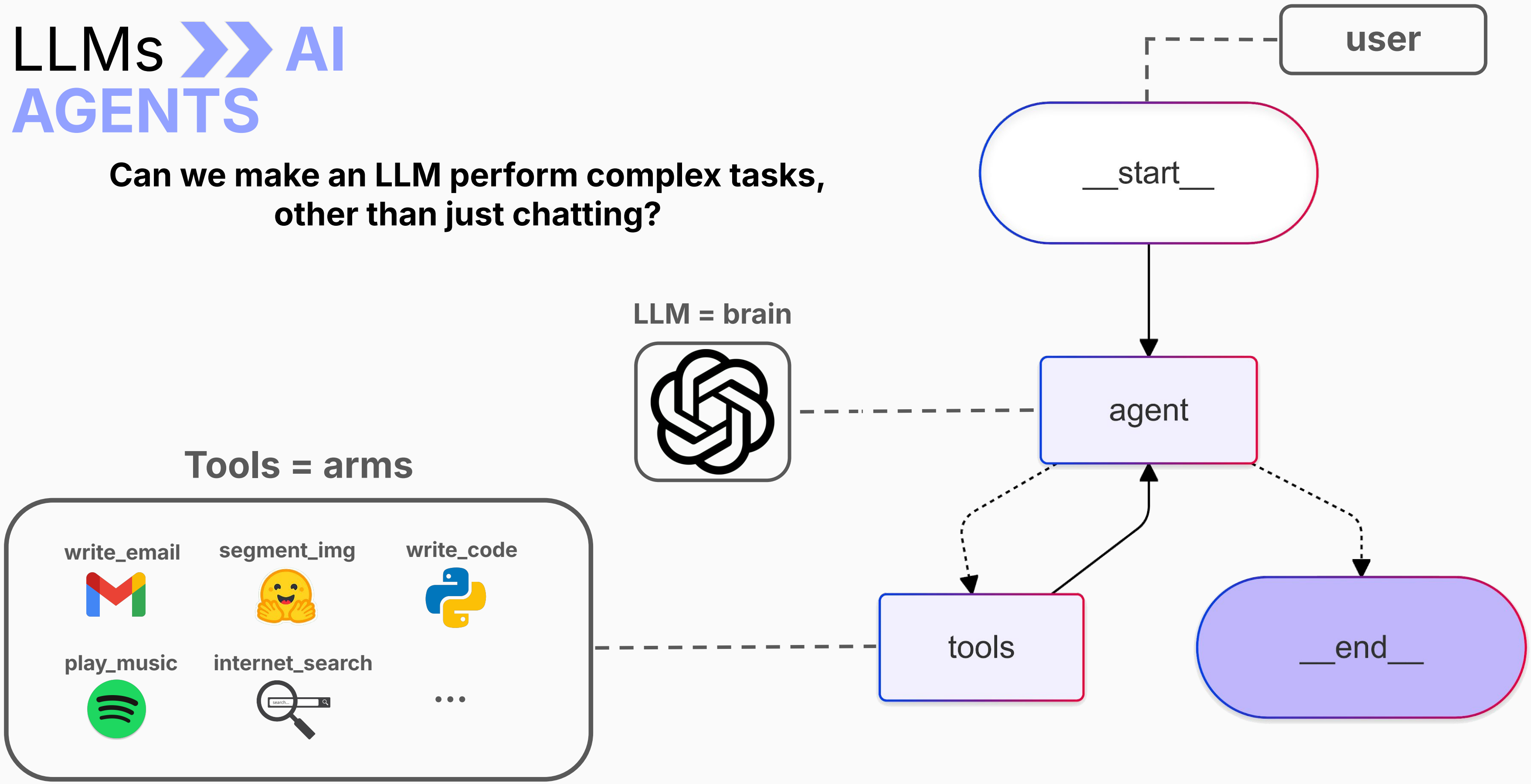
Attention is all you need!
(2017)





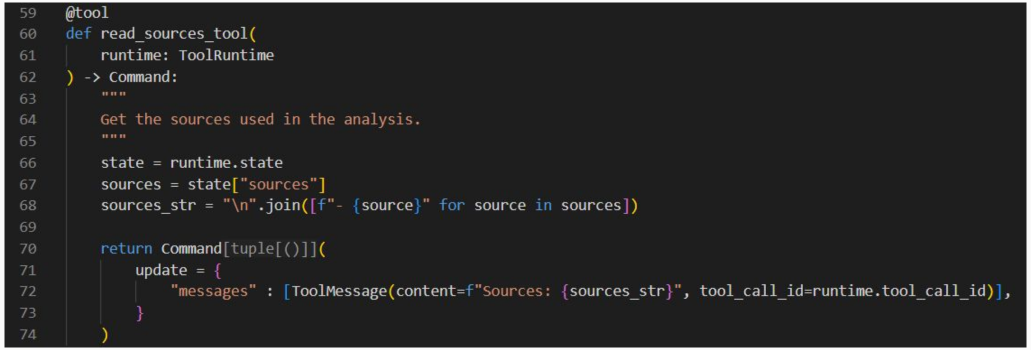
LLMs ❯❯ AI AGENTS

Can we make an LLM perform complex tasks, other than just chatting?



Tools Examples

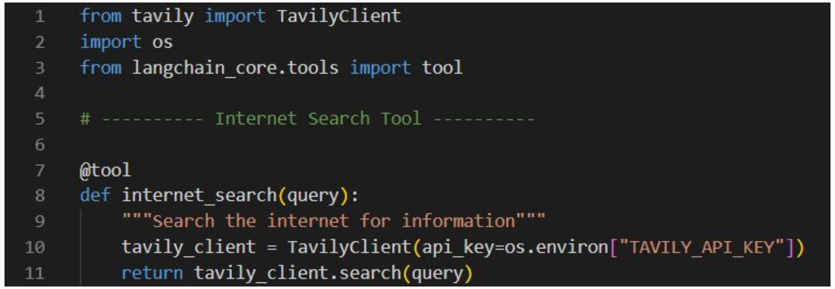
Usual tool structure



```python
@tool
def read_sources_tool(
    runtime: ToolRuntime
) -> Command:
    """
    Get the sources used in the analysis.
    """
    state = runtime.state
    sources = state["sources"]
    sources_str = "\n".join([f"- {source}" for source in sources])

    return Command[tuple[()]](
        update = {
            "messages" : [ToolMessage(content=f"Sources: {sources_str}", tool_call_id=runtime.tool_call_id)],
        }
    )
```

Tools w/ API calls



```python
from tavily import TavilyClient
import os
from langchain_core.tools import tool

# ---------- Internet Search Tool ----------

@tool
def internet_search(query):
    """Search the internet for information"""
    tavily_client = TavilyClient(api_key=os.environ["TAVILY_API_KEY"])
    return tavily_client.search(query)
```

Resources

- Course Notebooks on GitHub: https://github.com/MatteoFalcioni/Learning-LangGraph
- LangChain Academy: LangChain Academy
- LangGraph Graph API: Graph API overview - Docs by LangChain
- LangChain Docs: LangChain overview - Docs by LangChain
- LangChain Reference: Home | LangChain Reference
- LangChain OpenTutorial: 🔗 The LangChain Open Tutorial for Everyone

For any information or doubts don't hesitate to contact me at *matteo.falcioni3@unibo.it*