ELTE | FACULTY OF INFORMATICS

Data Science Agents

Run locally

MS Taskweaver

- Open-Source
- Configurable
- Python-kernel is included by default

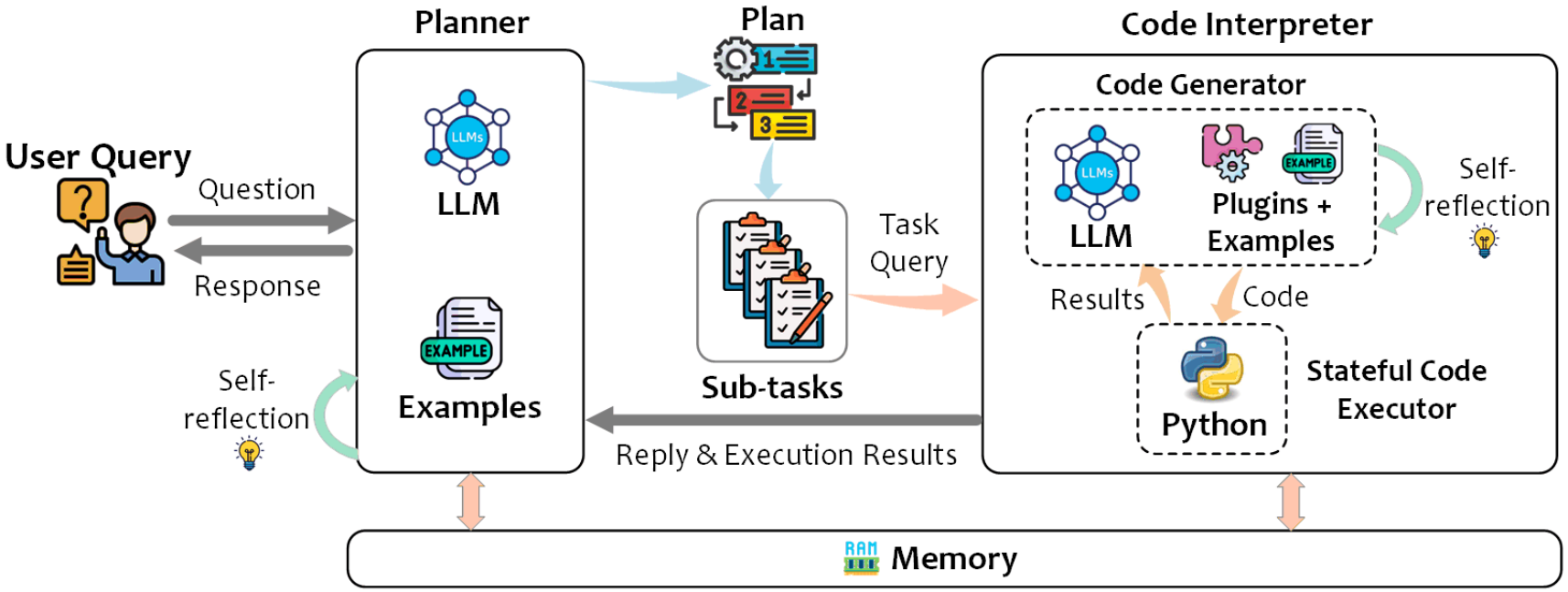
git clone https://github.com/microsoft/TaskWeaver.git

cd TaskWeaver

pip install -r requirements.txt

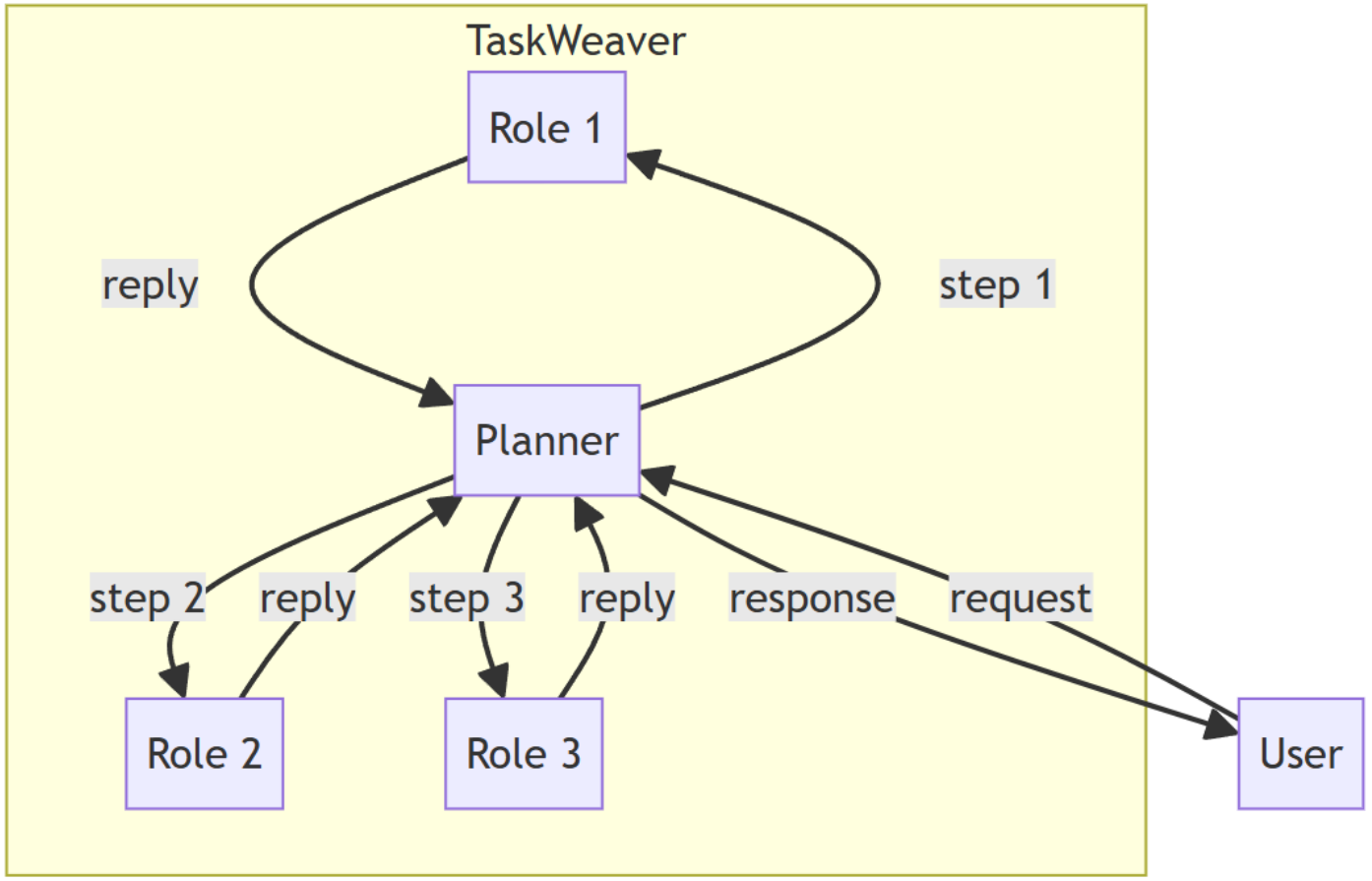
Plugins

- Code Intepreter is extendable with Plugins



Roles / Workflow

- The Planner decomposes the problem
- Roles are used as separate agents
- The user is notified with the final answer



Setup LLM for Taskweaver

- OpenAI API supported!
- Open-source (local) alternatives
  - Ollama
- Add API key and set the model to GPT-4o at ***project/taskweaver_config.json***
- Setup web app
  - ***pip install -U chainlit***

Webapp

- ***cd playground/UI/***
- ***chainlit run app.py***
- *Go to: http://localhost:8000/*
- *Upload sunspot data from Session 2*

Extensions

Role	Plugin
A new type of Agent or participant	Coding „workflow”
Entire workflow	Should be callable in Python
LLM-based operations mainly	Code-based operations mainly (you could call an LLM)
Example: CitationManager, CommonSenseInterpreter	Example: ExperimentDataQuery, SemanticSearch, WeatherForecast

Develop a Plugin

- Example: Finite-difference Time-domain simulation
- Define a flexible framework

Develop a Plugin

- TaskWeaver reads the YAML configuration

```yaml
name: my_plugin
enabled: true
required: false
description: >-
  my_plugin does…
examples:
  value = my_plugin(param1)
```

```yaml
parameters:
  - name: param1
    type: int
    required: true
    description: Rules on
how to fill this.
```

```yaml
returns:
  - name: value
    type: int
    description: Rules on
how to interpret this.
```

Develop a Plugin

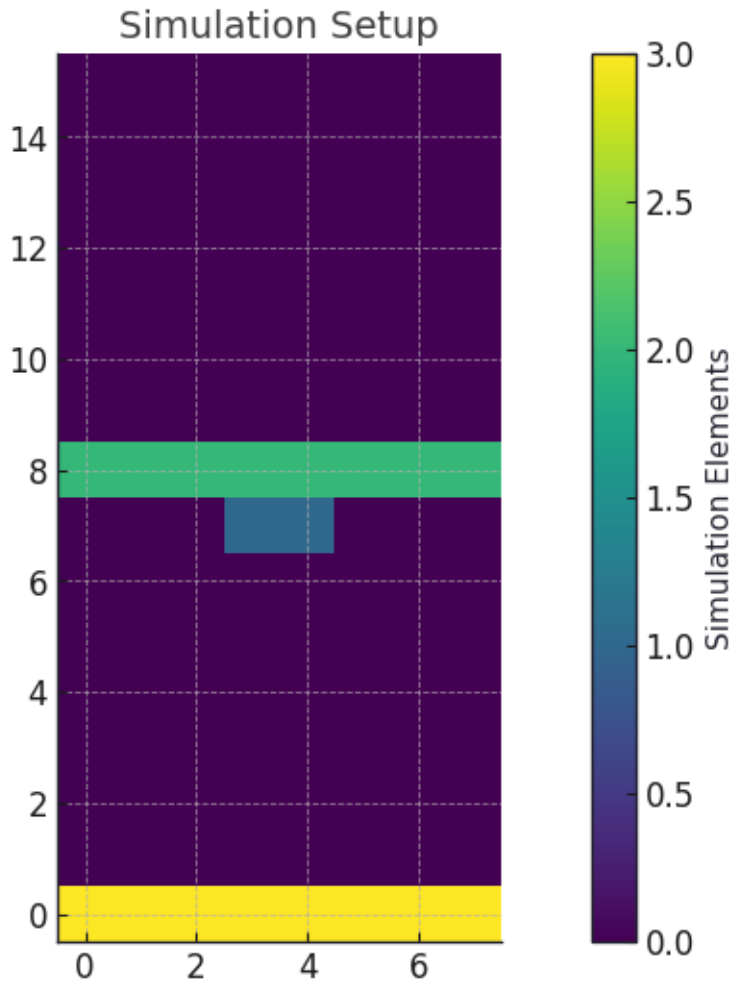
- Use the @register_plugin decorator
- Define a __call__ function with the same signature

```
@register_plugin
class MyPlugin(Plugin):
    def __call__(self, param1):
        pass
        return value
```

Beware TaskWeaver will block during the execution of the plugin code!

Develop a Plugin

- Compare results with FDTD plugin and without it!
- Update the plugin or use your favorite library to play around with TaskWeaver!



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