CHESHIRE CAT: AN OPEN SOURCE FRAMEWORK FOR LONG TAIL AI APPLICATIONS

A PREPRINT

Piero Savastano *
Independent Researcher
Rome, Italy
piero.savastano@gmail.com

Nicola Corbellini
Department of ...
University ...
City, Country
nicola.corbellini@edu.unige.it

Coauthor
Affiliation
Address
email@emil.email

Coauthor
Affiliation
Address
email@emil.email

Coauthor
Affiliation
Address
email@emil.email

April 27, 2023

ABSTRACT

Recent developments in Large Language Models opened up a vast ecosystem of applications. We introduce an architecture aimed at the construction of long tail AI assistants. In the same way Content Management Systems allowed rapid diffusion and personalization of web applications, we propose an architecture and framework to do the same with AI assistants based on a language model. The architecture presents itself as a web service, featuring a vector long term memory, a file uploader and a plugin system for extendibility. A Python implementation already exists here []

Keywords Artificial Intelligence · Cognitive Architecture · Open Source · Large Language Models

1 Introduction

Extend the abstract on why we are doing this and how. This is the next generation of AI assistants (after https://arxiv.org/pdf/1712.05181.pdf)

2 State of the Art

Describe current scientific ecosystem, giving reference to proprietary solutions (advanced, not scientifically shared) and open source tools.

2.1 Large Language Models

Cloud private offering vs open ecosystem, distilled models, generators vs instruction based, RLHF

2.1.1 Agents

ReAct, ToolFormer, AutoGPT and others

*Use footnote for providing further information about author (webpage, alternative address).

2.1.2 Open source tooling

Langchain, vector dbs

3 The Cheshire Cat architecture

Here we explain how the cat works

3.1 Main loop

Main conversational flow

3.2 Large Language Model

- LLM agnosticism
- LLM as a part, not as the whole AI (pure AGI via deep learning may arrive but in this way we accomplish control and feasability on the short term)
- Neurosymbolic approach (mixture of neural and symbolic computation)
- Main prompt

3.3 Vector Memory

- Embedding + approximate nearest neighbour
- HyDE

3.4 Plugin system

Here we explain how plugins work and how they are a combination between WordPress style plugins and the Toolformer

3.4.1 Hooks

How hooks work

3.4.2 Tools

How Tools work

3.5 Endpoints

Network capabilities

4 Use cases

Let's describe a few use cases for the short viewed readers.

5 Conclusions

LEt's describe a few use cases for the short viewed readers.

5.1 Citations

Citations use `natbib`. The documentation may be found at

`http://mirrors.ctan.org/macros/latex/contrib/natbib/natnotes.pdf`

Here is an example usage of the two main commands (`citet` and `citep`): Some people thought a thing [**??**] but other people thought something else [**?**]. Many people have speculated that if we knew exactly why **?** thought this...

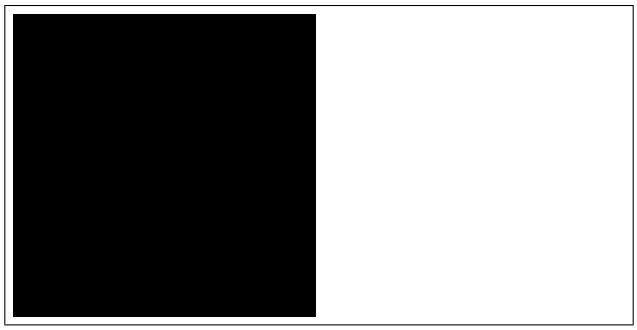

Figure 1: Sample figure caption.

Table 1: Sample table title

	Part	
Name	Description	Size (μm)
Dendrite	Input terminal	$\sim$100
Axon	Output terminal	$\sim$10
Soma	Cell body	up to 10^6

5.2 Figures

Suspendisse vitae elit. Aliquam arcu neque, ornare in, ullamcorper quis, commodo eu, libero. Fusce sagittis erat at erat tristique mollis. Maecenas sapien libero, molestie et, lobortis in, sodales eget, dui. Morbi ultrices rutrum lorem. Nam elementum ullamcorper leo. Morbi dui. Aliquam sagittis. Nunc placerat. Pellentesque tristique sodales est. Maecenas imperdiet lacinia velit. Cras non urna. Morbi eros pede, suscipit ac, varius vel, egestas non, eros. Praesent malesuada, diam id pretium elementum, eros sem dictum tortor, vel consectetuer odio sem sed wisi. See Figure 1. Here is how you add footnotes. [2] Sed feugiat. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Ut pellentesque augue sed urna. Vestibulum diam eros, fringilla et, consectetuer eu, nonummy id, sapien. Nullam at lectus. In sagittis ultrices mauris. Curabitur malesuada erat sit amet massa. Fusce blandit. Aliquam erat volutpat. Aliquam euismod. Aenean vel lectus. Nunc imperdiet justo nec dolor.

5.3 Tables

See awesome Table 1.

The documentation for `booktabs` ('Publication quality tables in LaTeX') is available from:

`https://www.ctan.org/pkg/booktabs`

5.4 Lists

- Lorem ipsum dolor sit amet
- consectetur adipiscing elit.
- Aliquam dignissim blandit est, in dictum tortor gravida eget. In ac rutrum magna.

[2] Sample of the first footnote.