

Chatbots for Astronomers

Facilitating use of documentation-heavy complex tools and data

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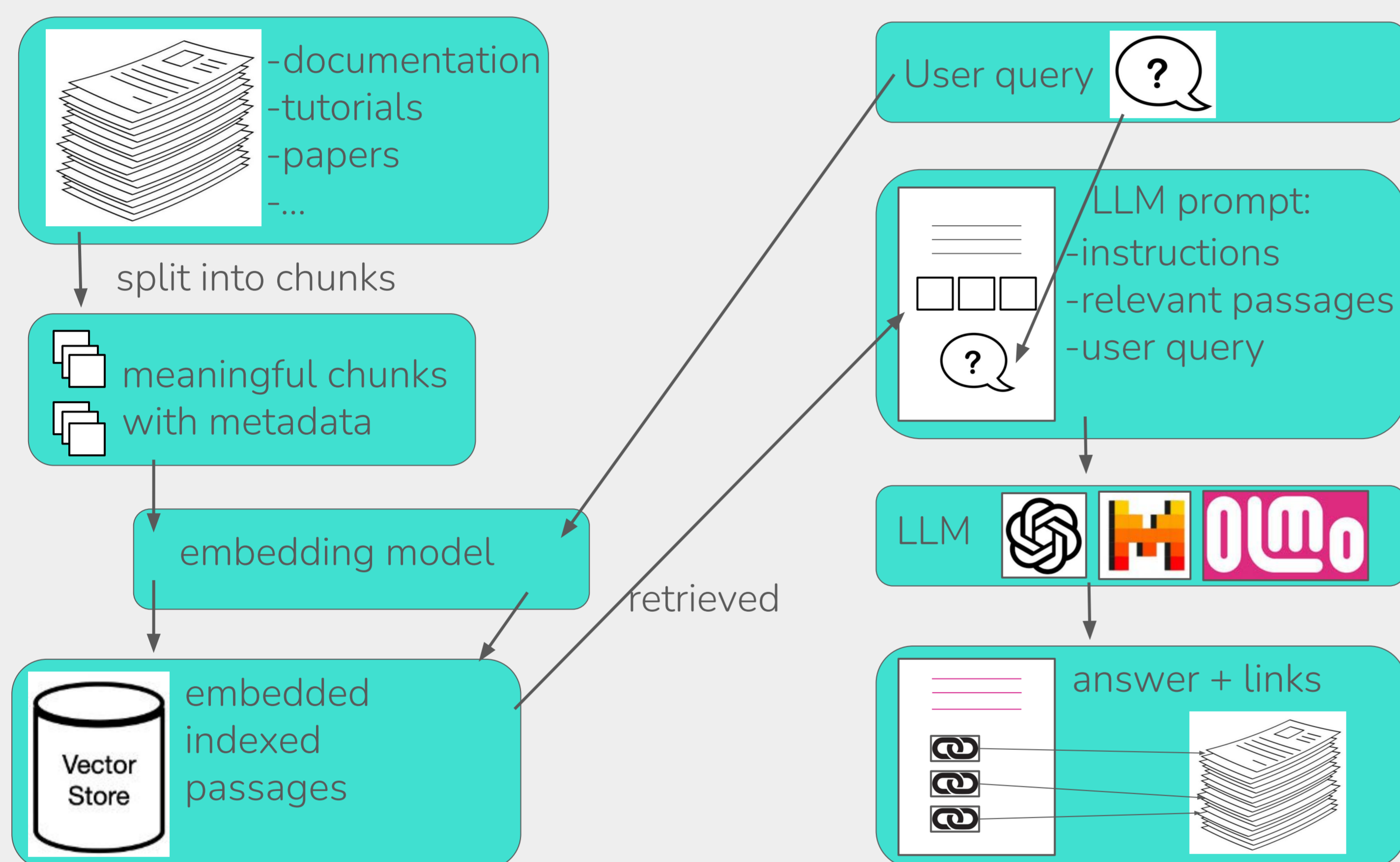
You're thinking of using a new tool or data source. You're not sure where to start.



What do you do?

- Read the documentation (can be tedious and hard to find what you need)
- Ask a colleague (you may not find someone with the needed knowledge and time)
- Ask ChatGPT (information can be hard to verify, links may not work)
- Ask the project's RAG chatbot

Retrieval-Augmented Generation(RAG)



- free form query
- answer based on reliable sources
- working links to original documents
- answer tailored to user's needs (e.g. expertise level)
- follow-up questions in natural dialog

Prototypes for Gaia and PLATO

Gaia

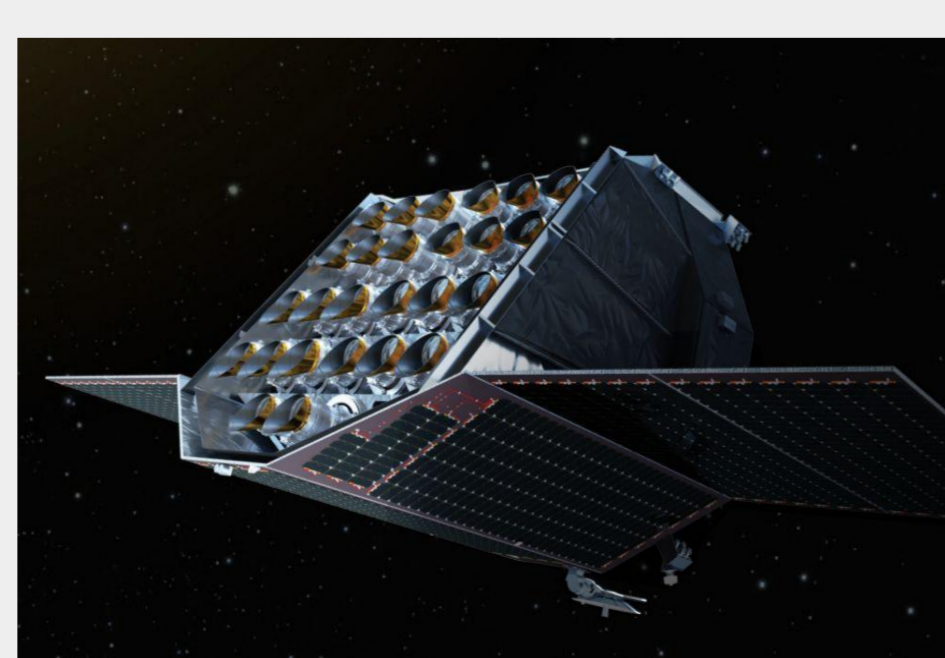
- long-running ESA mission
- ETA final data release: 2030
- complex data products
- helpdesk available for limited time
- data relevant well beyond mission end date
- prototype with DR3 documentation and papers



Try it at: <https://gaiachat.streamlit.app/>

PLATO

- new ESA mission
- launch planned: 2026
- prototype with PLATOpub papers



Try it at: <https://platochat.streamlit.app/>

Gaia chatbot

How can I help you?

What is Gaia?

Gaia is an ambitious mission by the European Space Agency (ESA) to chart a three-dimensional map of our Galaxy, the Milky Way, in the process revealing the composition, formation, and evolution of the Galaxy. Gaia does this by precisely measuring the positions, distances, and motions of stars with unprecedented accuracy. The spacecraft consists of two main components: the payload module (PLM), which houses the scientific instruments, and the service module (SM), which provides the necessary support functions for the spacecraft [3].

The mission is overseen by the ESA Gaia mission manager, who is responsible for all aspects of the mission, including the science ground segment, the operational ground segment, and the spacecraft itself. The scientific return of the mission is maximized under the guidance of the Gaia project scientist, who operates within the programmatic boundaries set by the ESA member states [2].

The Gaia science team (GST) is an advisory body that provides independent advice to ESA on scientific performance and goals, and the data processing and analysis consortium (DPAC) is responsible for processing the vast amounts of data collected by Gaia [2].

Each source observed by Gaia is assigned a unique numerical identifier, which can be found in the `gaia_source` catalog, and this identifier is essential for researchers when accessing and analyzing Gaia data [1].

For more detailed information on the Gaia mission, you can refer to the overview provided in Gaia Collaboration et al. (2016b) [3]. If you have any specific questions or need assistance with Gaia data products, feel free to ask.

See sources

- [Gaia] Data Release 3: The second Gaia catalogue of long-period variable candidates (Section: Catalogue construction, Data fields, paragraph: 6) <https://arxiv.org/pdf/2206.05745.pdf>
- 1.1.5 ESA ground segment (Section: 1.1.5 ESA ground segment, Mission management) https://gaia.esac.esa.int/archive/documentation/GDR3/introduction/chap_cu0int/cu0int_sec_mission/cu0int_sec_gs.html
- 1.1.3 The spacecraft (Section: 1.1.3 The spacecraft, Overview) https://gaia.esac.esa.int/archive/documentation/GDR3/introduction/chap_cu0int/cu0int_sec_mission/cu0int_sec_spacecraft_intro.html
- [Gaia] Data Release 3: [grvs] photometry from the RVs spectra (Section: paragraph: 2) <https://arxiv.org/pdf/2206.05725.pdf>
- [Gaia] DR3 astrometric orbit determination, with Markov Chain Monte Carlo and Genetic Algorithms Systems with stellar, substellar, and planetary mass companions (Section: [Gaia] acknowledgements, paragraph: 3) <https://arxiv.org/pdf/2206.05439.pdf>
- [Gaia] Data Release 3 Properties and validation of the radial velocities (Section: Gaia DPAC acknowledgements, paragraph: 2) <https://arxiv.org/pdf/2206.05907.pdf>
- Gaia Data Release 3: Analysis of the Gaia BP/RP spectra using the General Stellar Parameterizer from Photometry (Section: Acknowledgements, paragraph: 4) <https://arxiv.org/pdf/2206.06138.pdf>

Your message