

ChatZSW – A RAG System for Scientific Research

<https://www.chat.zsw-bw.de> 




You:

How is sodium introduced in the ZSW study on GIGS solar cells?

ChatZSW:

In the baseline case sodium diffuses from the sodium-containing soda lime glass substrate through the Mo back contact layer into the CIGS layer during the high-temperature phase of the CIGS growth.

 Behavior of Na and RbF-Treated...

Ask anything...



Innovation Project

- ~~ChatGPT~~ ChatZSW
- Privacy-compliant
- Chat about scientific papers
- For ZSW employees
- Self-hosted at ZSW
- Wired to ZSW knowledge base

Team

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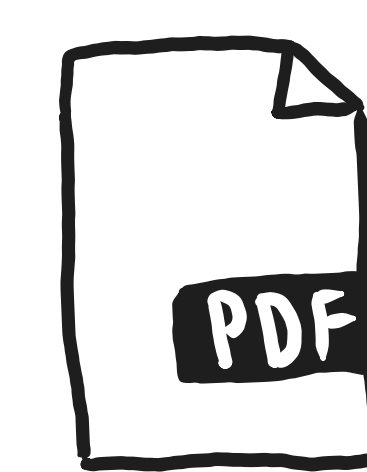
Supervision

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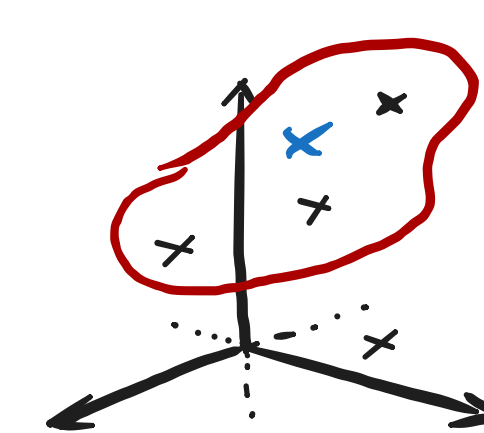
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Technologies



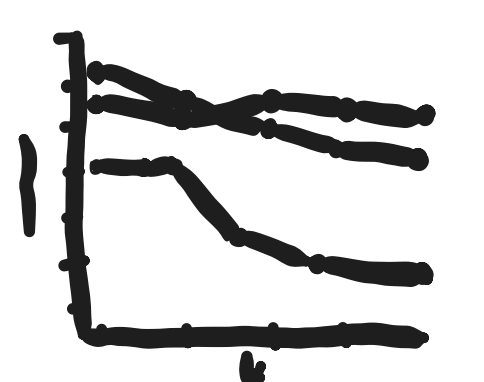
PDF Mining Pipeline



Retrieval Augmented Generation



Large Language Model



Validation

Conda

Unstructured

Pix2Tex

Langchain

PGVector

FastAPI

Docker

llama3.2 3B

llama3.3 70B

Ollama

Microsoft Guidance

FAISS

Jupyter

Retrieval Augmented Generation (RAG)

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ChatZSW

You:

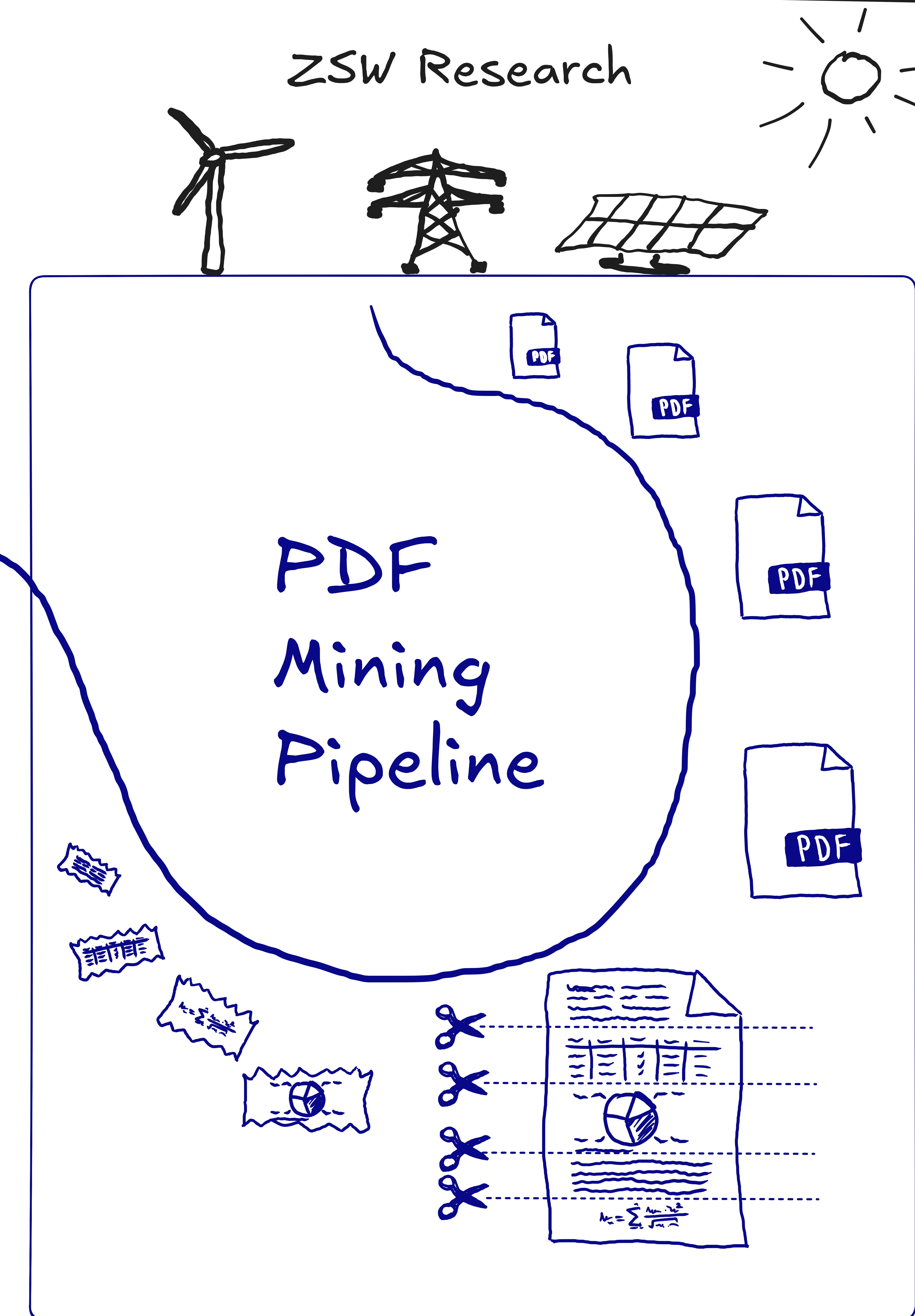
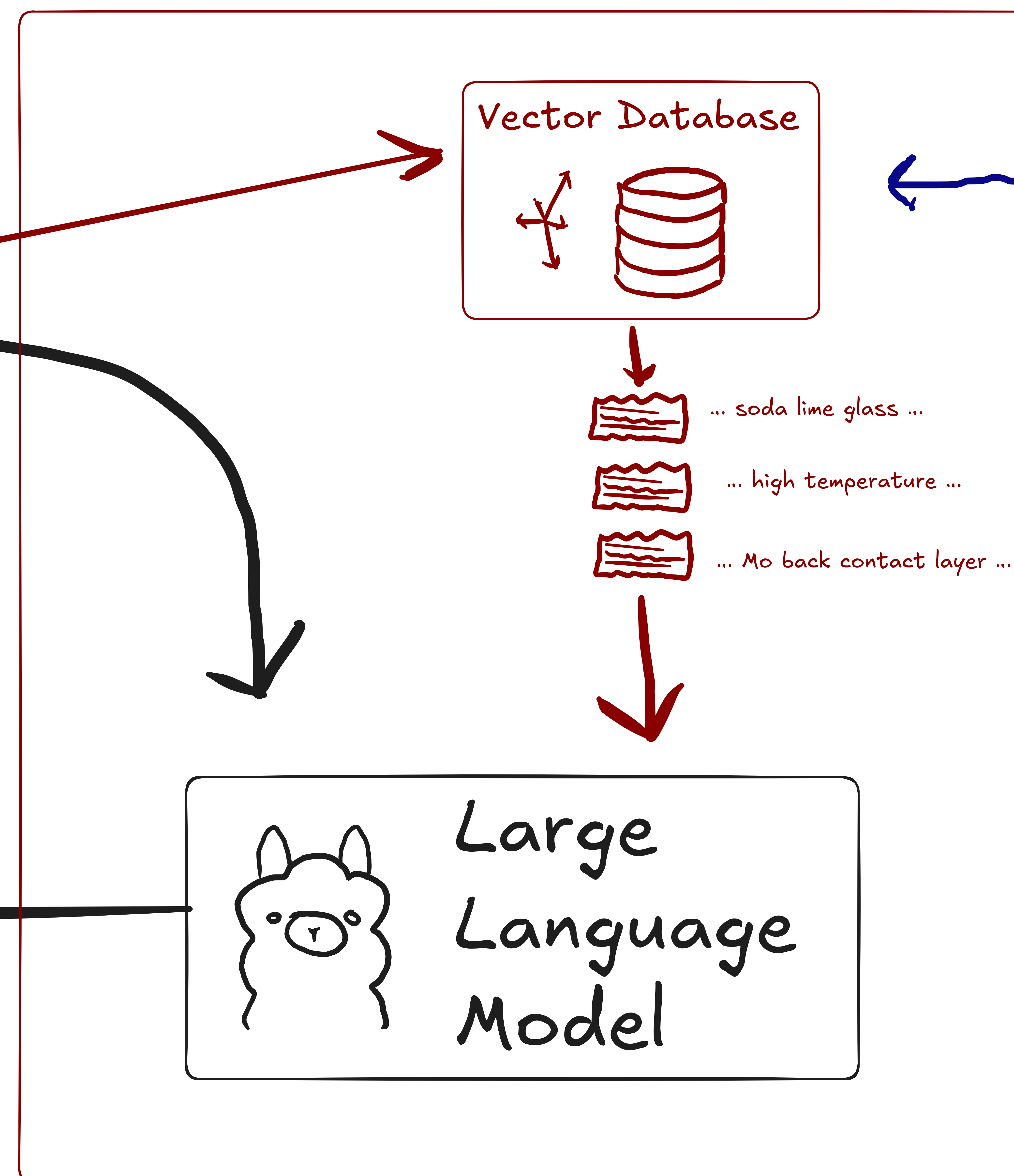
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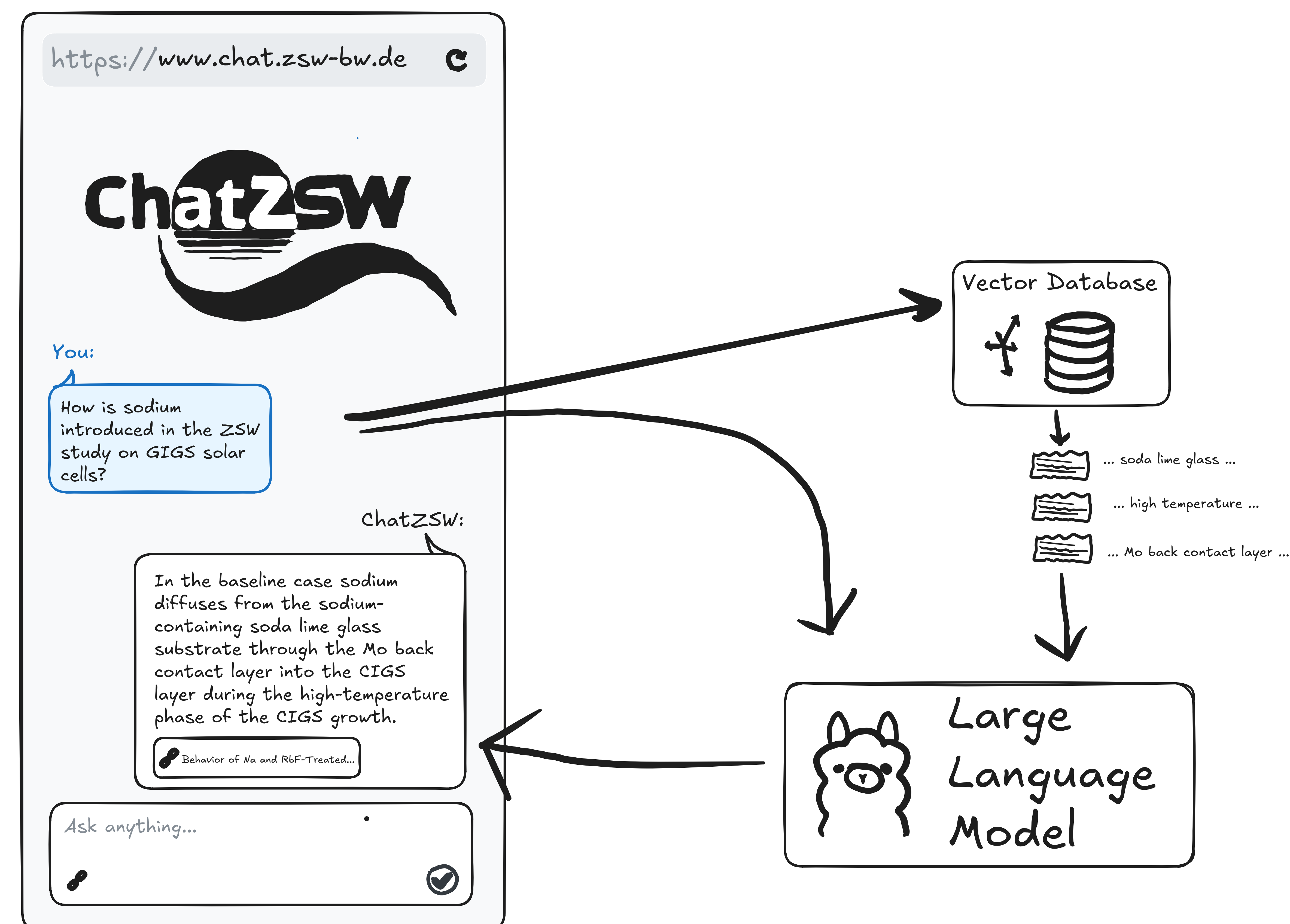
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How to evaluate answer quality?

Qualitative
User Tests



Retrieval Validation

- Human expert questions
- LLM generated questions

End-to-End Validation

- Human experts test Q & A
- LLM generated test Q & A

Hyperparameter
Optimization

