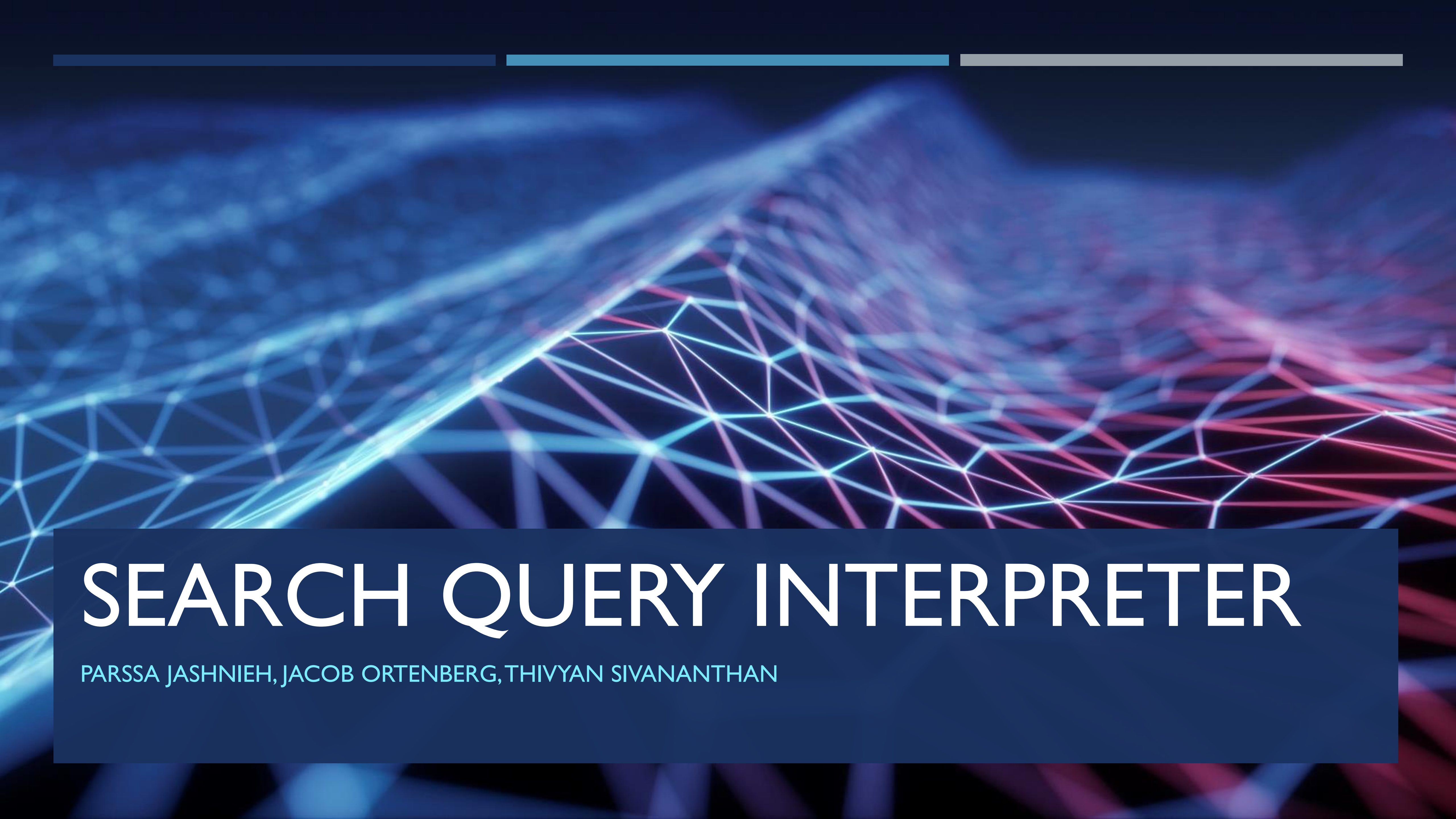

SEARCH QUERY INTERPRETER

PARSSA JASHNIEH, JACOB ORTENBERG, THIVYAN SIVANANTHAN

NATURAL LANGUAGE MEETS DATABASE:

SYSTEM TRANSPARENCY AND USER UNDERSTANDING IN NL-TO-SQL TRANSLATION

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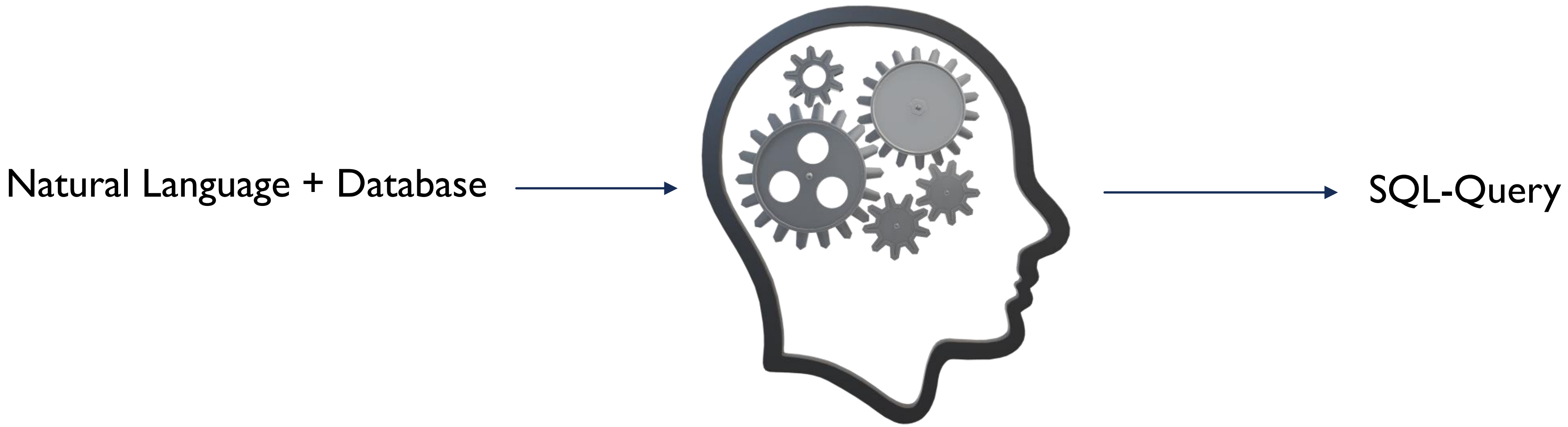
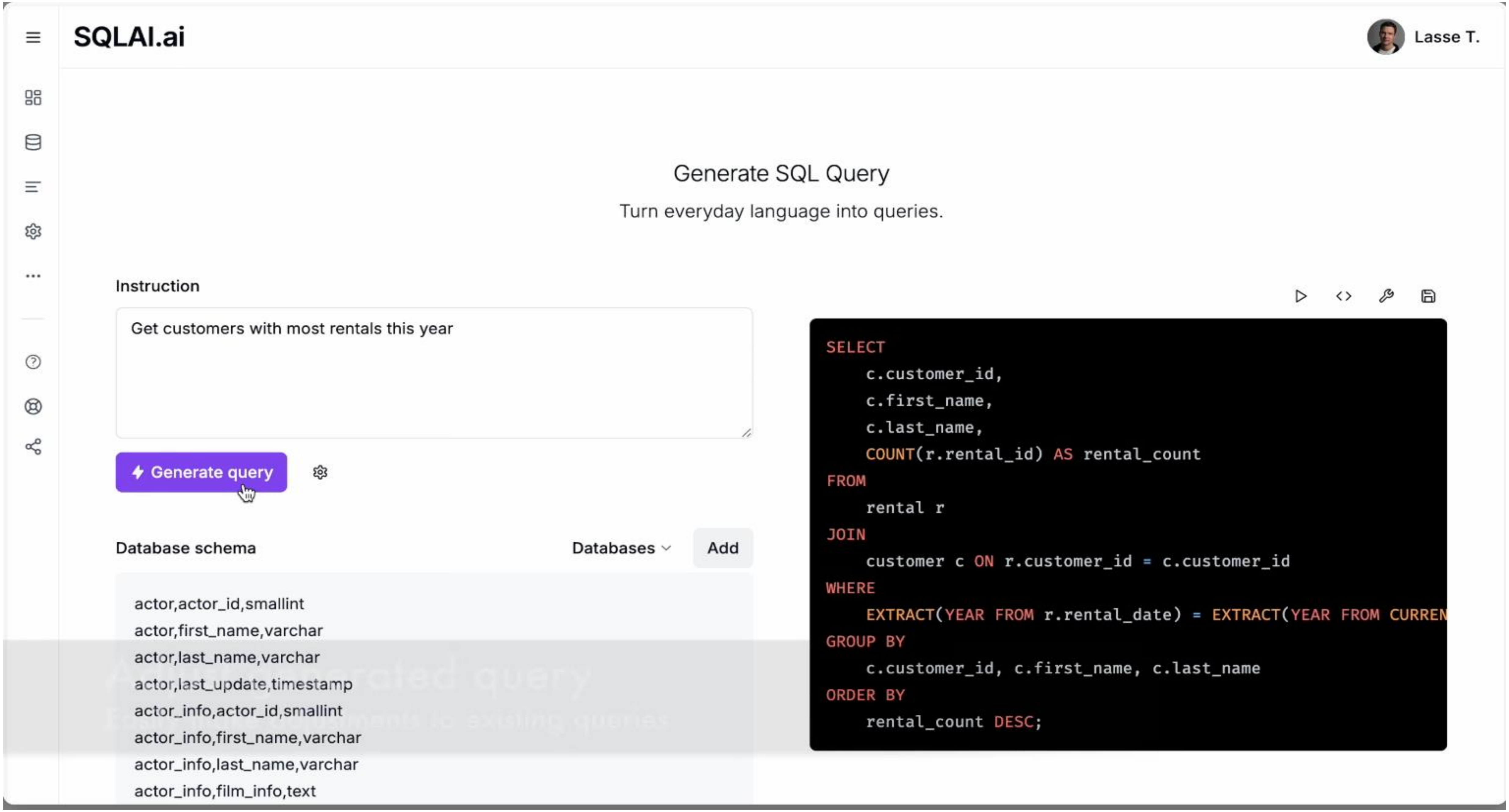


Natural Language + Database →

→ SQL-Query



Generate SQL Query

Turn everyday language into queries.

Instruction

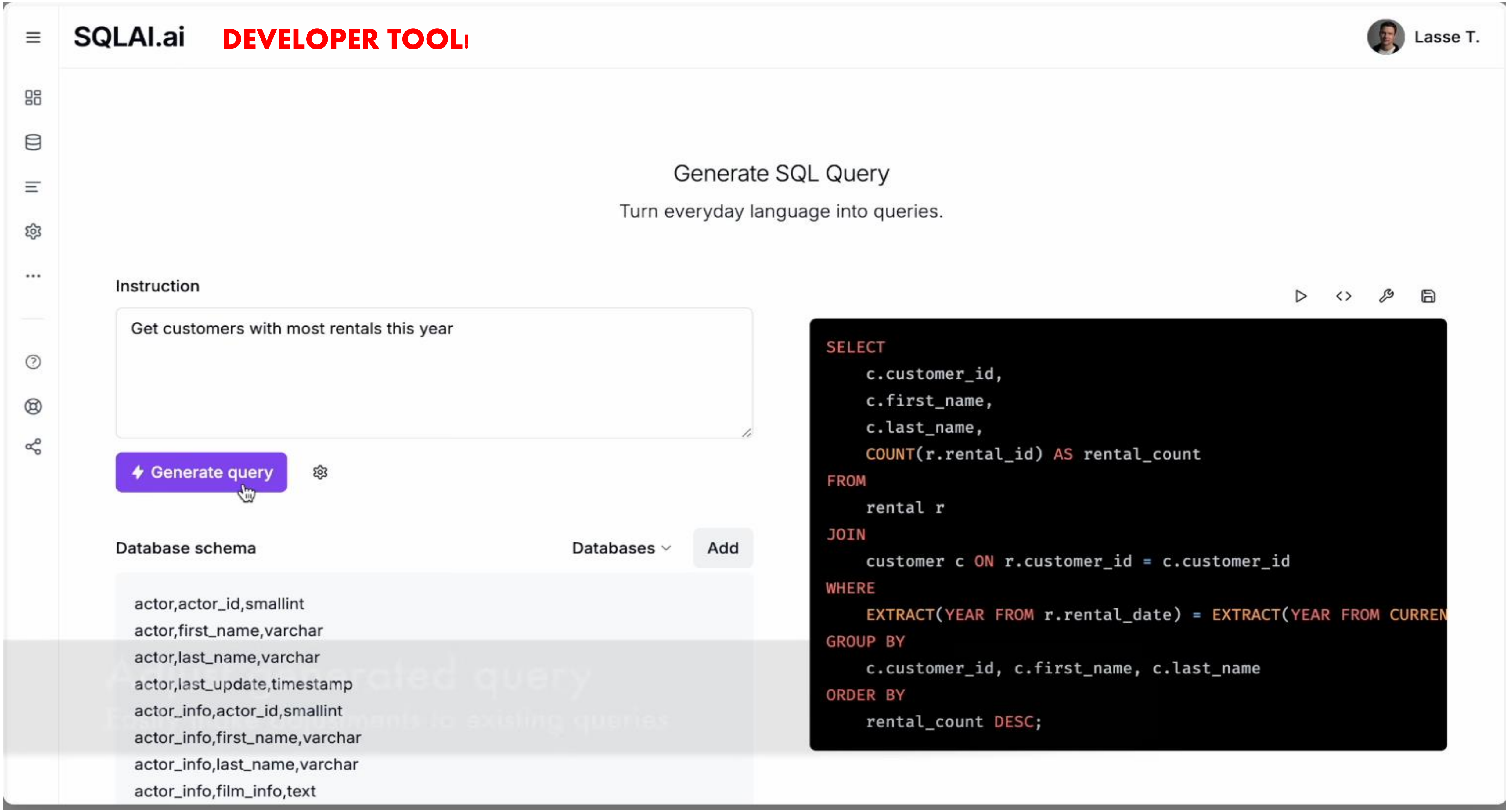
Get customers with most rentals this year

actor,actor_id,smallint
actor,first_name,varchar
actor,last_name,varchar
actor,last_update,timestamp
actor_info,actor_id,smallint
actor_info,first_name,varchar
actor_info,last_name,varchar
actor_info,film_info,text

```
SELECT
    c.customer_id,
    c.first_name,
    c.last_name,
    COUNT(r.rental_id) AS rental_count
FROM
    rental r
JOIN
    customer c ON r.customer_id = c.customer_id
WHERE
    EXTRACT(YEAR FROM r.rental_date) = EXTRACT(YEAR FROM CURREN
GROUP BY
    c.customer_id, c.first_name, c.last_name
ORDER BY
    rental_count DESC;
```

Adjust generated query

Easily make adjustments to existing queries



Generate SQL Query

Turn everyday language into queries.

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GROUP BY
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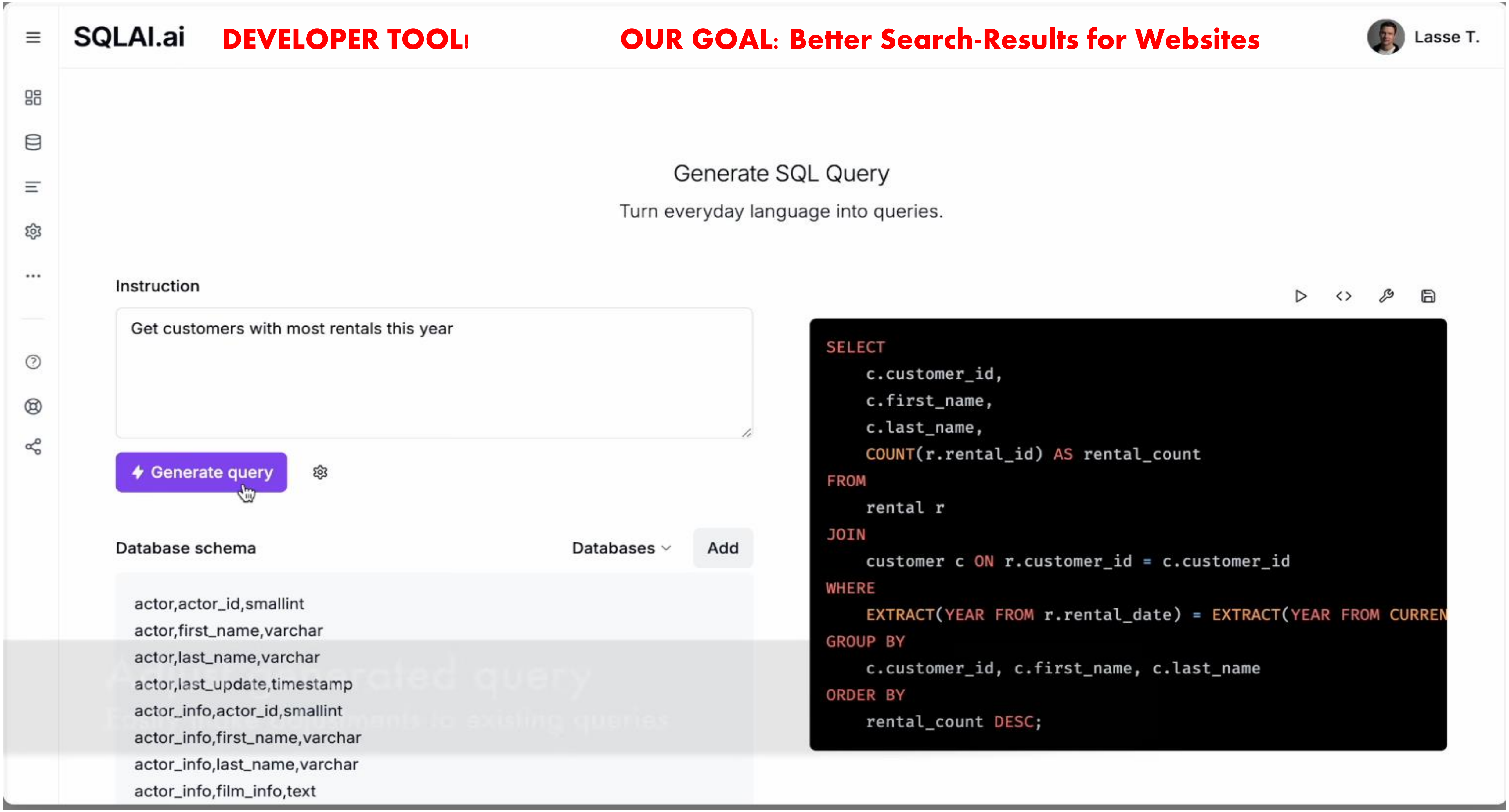
ORDER BY
    rental_count DESC;
```

Database schema

```
actor,actor_id,smallint
actor,first_name,varchar
actor,last_name,varchar
actor,last_update,timestamp
actor_info,actor_id,smallint
actor_info,first_name,varchar
actor_info,last_name,varchar
actor_info,film_info,text
```



DEVELOPER TOOL!

OUR GOAL: Better Search-Results for Websites

Generate SQL Query

Turn everyday language into queries.

Instruction

Get customers with most rentals this year

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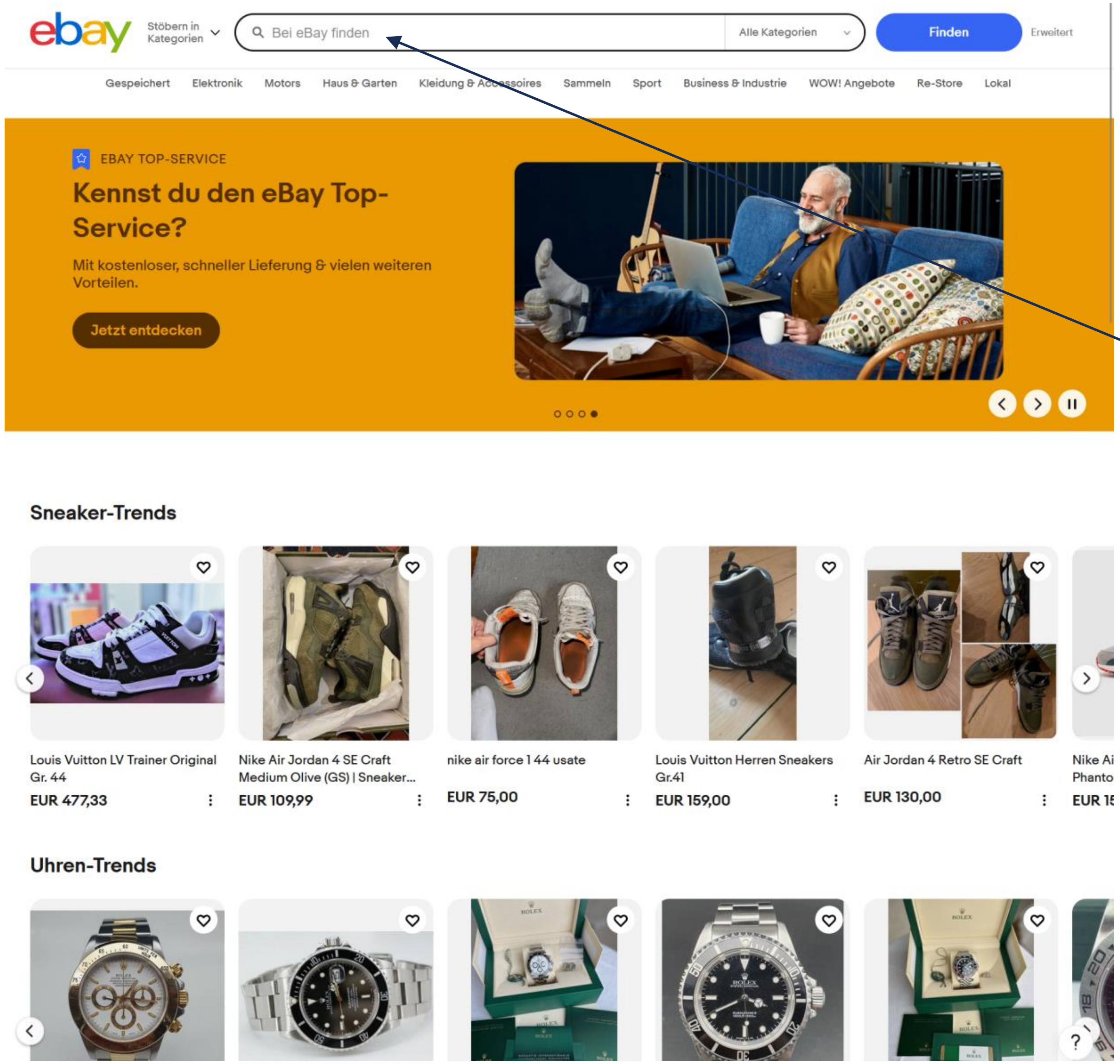


EBAY TOP-SERVICE

Kennst du den eBay Top-Service?

Mit kostenloser, schneller Lieferung & vielen weiteren Vorteilen.

Sneaker-Trends

Louis Vuitton LV Trainer Original Gr. 44
EUR 477,33

Nike Air Jordan 4 SE Craft Medium Olive (GS) | Sneaker...
EUR 109,99

nike air force 1 44 usate
EUR 75,00

Louis Vuitton Herren Sneakers Gr.41
EUR 159,00

Air Jordan 4 Retro SE Craft
EUR 130,00

Nike Ai
Phanto
EUR 15

Uhren-Trends

Static SQL-Template most likely used

Red t-shirts under 20€

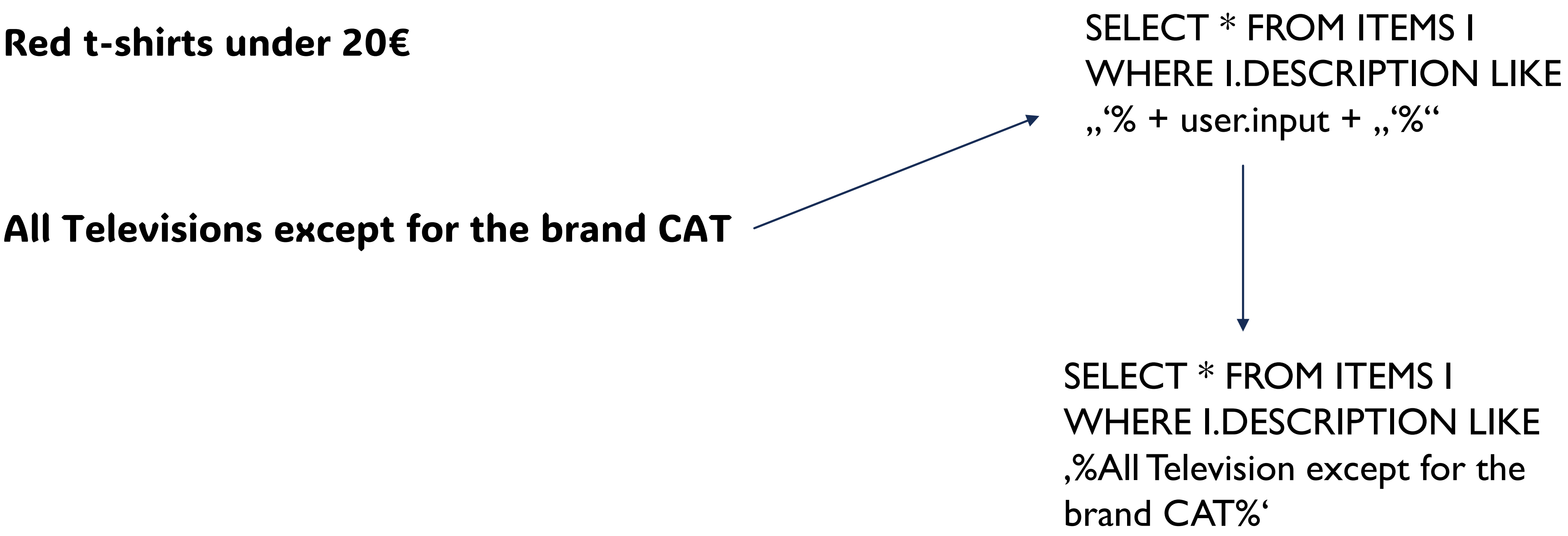
All Televisions except for the brand CAT

Red t-shirts under 20€

SELECT * FROM ITEMS I
WHERE I.DESCRIPTION LIKE
„‘% + user.input + „‘%“

All Televisions except for the brand CAT

SELECT * FROM ITEMS I
WHERE I.DESCRIPTION LIKE
‚%Red t-shirts under 20€%‘



Red t-shirts under 20€

All Televisions except for the brand CAT

SELECT * FROM ITEMS I
WHERE I.DESCRIPTION LIKE
„‘% + user.input + „‘%“

SELECT * FROM ITEMS I
WHERE I.DESCRIPTION LIKE
‚%All Television except for the
brand CAT%‘

NOW WITH AGENT TRANSLATING TO SQL

Red t-shirts under 20€

All Televisions except for the brand CAT

```
SELECT * FROM ITEMS I WHERE
I.DESCRIPTION LIKE
‚%Red t-shirts%‘ AND I.PRICE < 20
```

Red t-shirts under 20€

All Televisions except for the brand CAT

```
SELECT * FROM ITEMS I
WHERE I.CATEGORY =
„Television“ AND I.ID NOT IN
(SELECT ID FROM ITEMS
WHERE ITEMS.CATEGORY =
„Television“ AND
ITEMS.BRAND = „CAT“)
```

WHERE ARE WE?

Red t-shirts under 20€

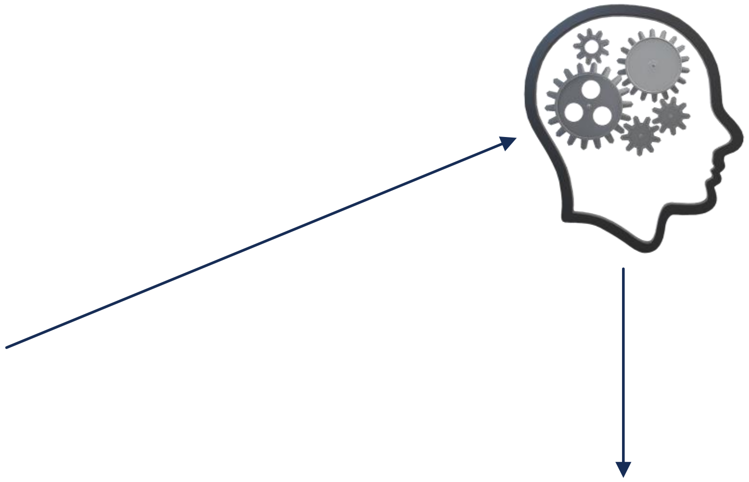
All Televisions except for the brand CAT

```
SELECT * FROM ITEMS I
WHERE I.CATEGORY =
„Television“ AND I.ID NOT IN
(SELECT ID FROM ITEMS
WHERE ITEMS.CATEGORY =
„Television“ AND
ITEMS.BRAND = „CAT“)
```

WHERE ARE WE? -> DEMO-TIME

Red t-shirts under 20€

All Televisions except for the brand CAT



```
SELECT * FROM ITEMS I
WHERE I.CATEGORY =
„Television“ AND I.ID NOT IN
(SELECT ID FROM ITEMS
WHERE ITEMS.CATEGORY =
„Television“ AND
ITEMS.BRAND = „CAT“)
```

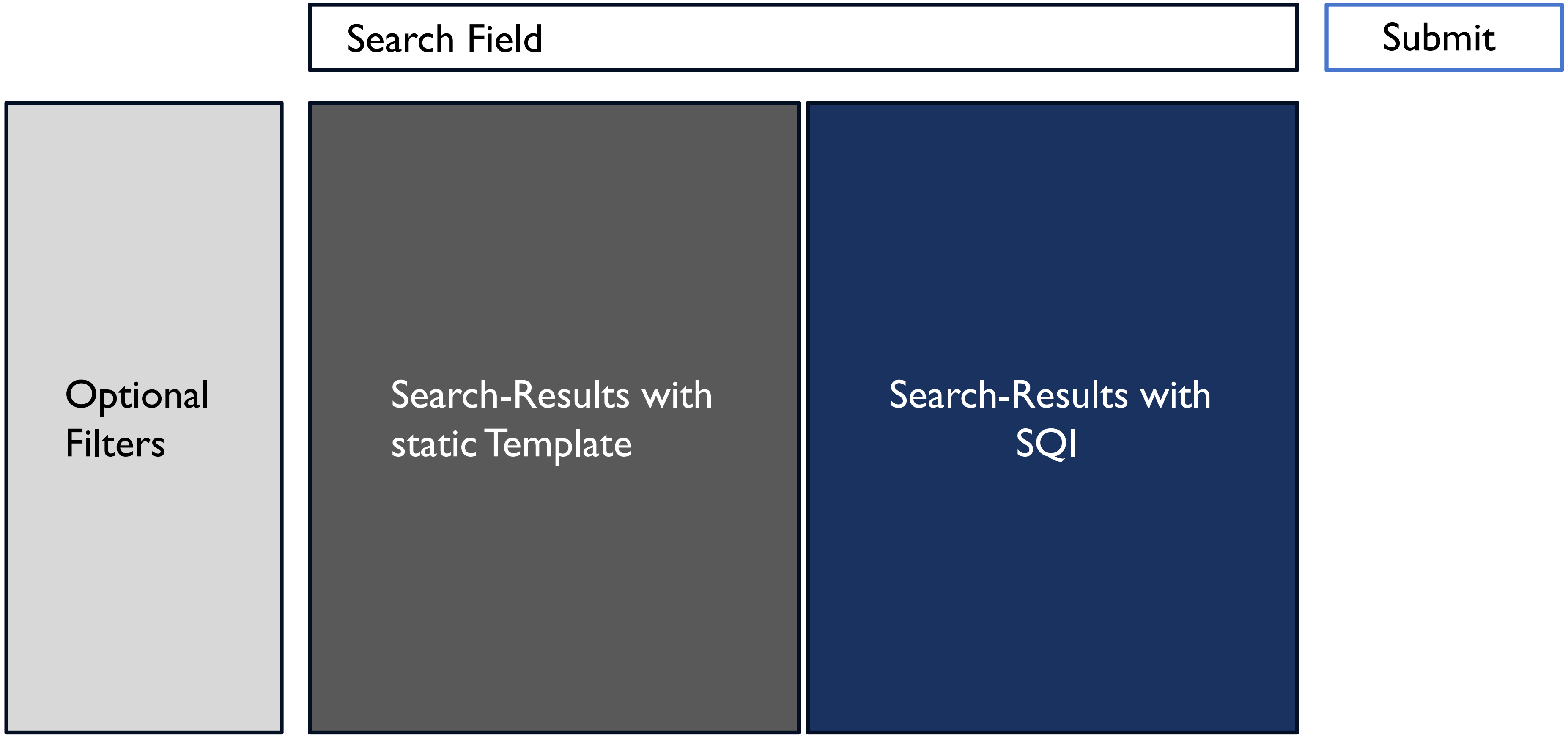
WHAT WE HAVE DONE

- Working AI
- Docker Environment
- System-Prompt that uses a RAG

WHAT NEEDS TO BE DONE

- Create a UI that allows for a side by side comparison
- Convey a survey based on the UI

UI POC („WEBAY“)



Search Field

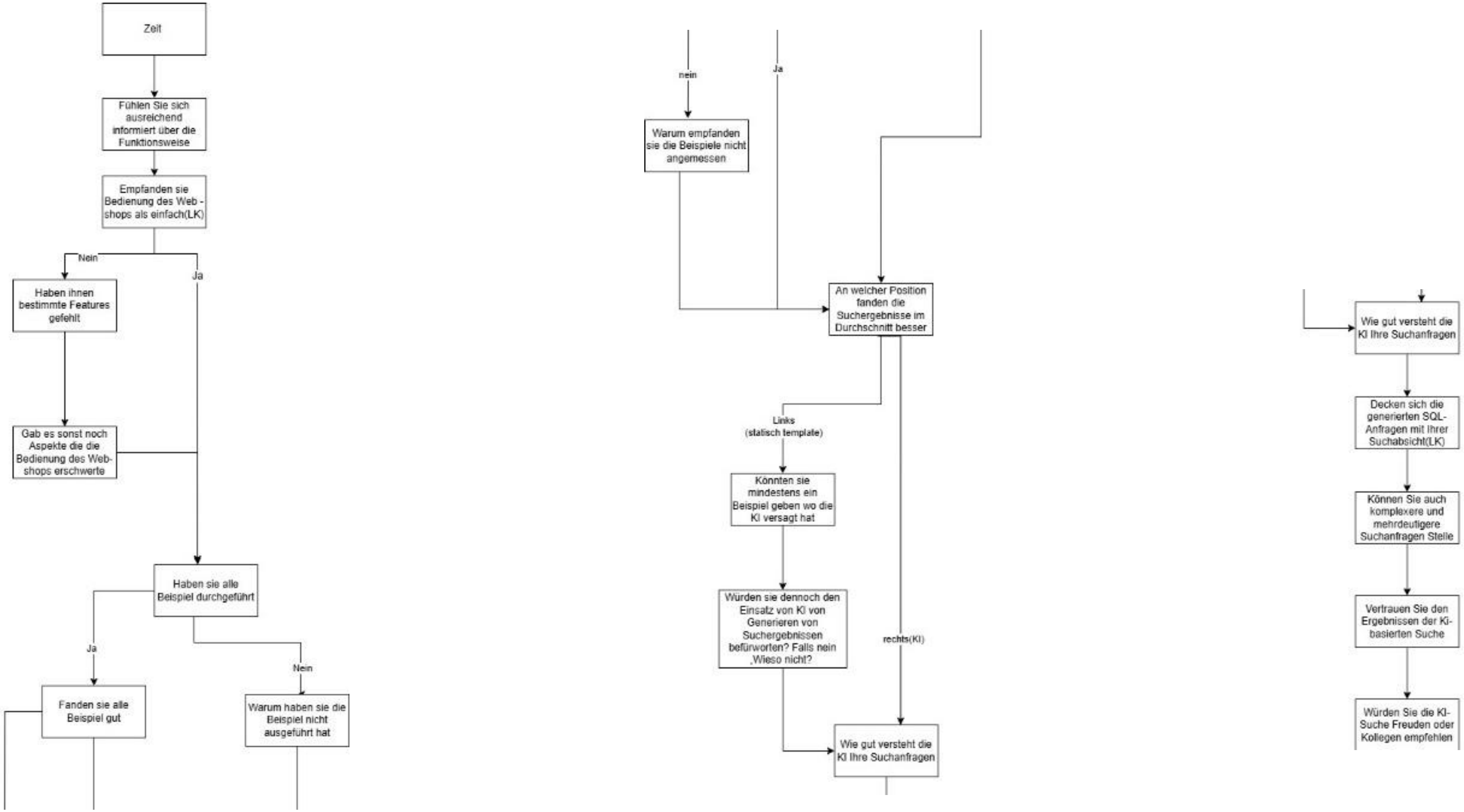
Submit

Optional Filters

Search-Results with static Template

Search-Results with SQI

(Dynamic)-Survey Template



Zeit

Fühlen Sie sich ausreichend informiert über die Funktionsweise

Empfanden sie Bedienung des Web - shops als einfach(LK)

Nein

Ja

Haben ihnen bestimmte Features gefehlt

Gab es sonst noch Aspekte die die Bedienung des Web-shops erschwerte

Haben sie alle Beispiel durchgeführt

Ja

Nein

Fanden sie alle Beispiel gut

Warum haben sie die Beispiel nicht ausgeführt hat

nein

Ja

Warum empfanden sie die Beispiele nicht angemessen

An welcher Position fanden die Suchergebnisse im Durchschnitt besser

Links (statisch template)

rechts(KI)

Könnten sie mindestens ein Beispiel geben wo die KI versagt hat

Würden sie dennoch den Einsatz von KI von Generieren von Suchergebnissen befürworten? Falls nein ,Wieso nicht?

Wie gut versteht die KI Ihre Suchanfragen

Wie gut versteht die KI Ihre Suchanfragen

Decken sich die generierten SQL-Anfragen mit Ihrer Suchabsicht(LK)

Können Sie auch komplexere und mehrdeutigere Suchanfragen Stelle

Vertrauen Sie den Ergebnissen der KI-basierten Suche

Würden Sie die KI-Suche Freuden oder Kollegen empfehlen

VIELEN DANK