UWA NLP-TLP

Talk with Your Data

Application Development in Era of LLM

Speaker: Pascal Sun

Who am I ?

- A Developer

- A Researcher

Three Keywords

- Large Language Model

- Data

- Application Development

- Closed Source

- Open Source

- Performance

- Privacy

- Controllability

Opportunities

- Conversational Agent

- Co-pilot
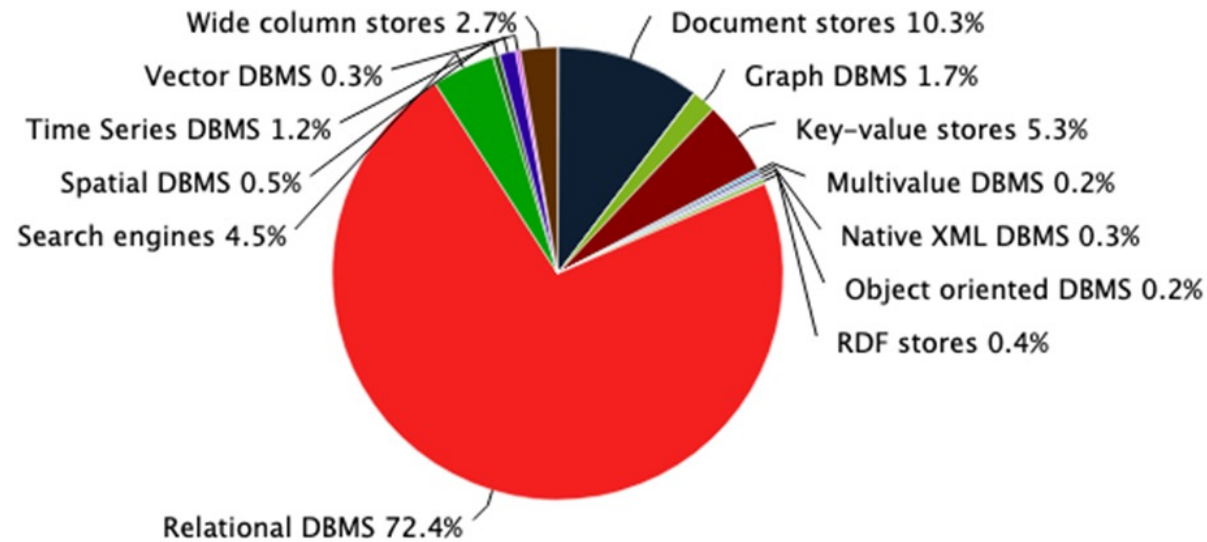
- Automation

- Traditional NLP Tasks

- **RAG Chat**

- Data hallucination

- External data

What is RAG?

- **R**etrieval of Relevant Information

- **A**ugment the prompt

- **G**enerate Result

Ranking scores per category in percent, March 2024

Wide column stores 2.7%
Vector DBMS 0.3%
Time Series DBMS 1.2%
Spatial DBMS 0.5%
Search engines 4.5%

Document stores 10.3%
Graph DBMS 1.7%
Key-value stores 5.3%
Multivalue DBMS 0.2%
Native XML DBMS 0.3%
Object oriented DBMS 0.2%
RDF stores 0.4%

Relational DBMS 72.4%

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This chart shows the popularity of each category. It is calculated with the popularity (i.e. the ranking scores) of all individual systems per category. The sum of all ranking scores is 100%.

Complete trend, starting with January 2013
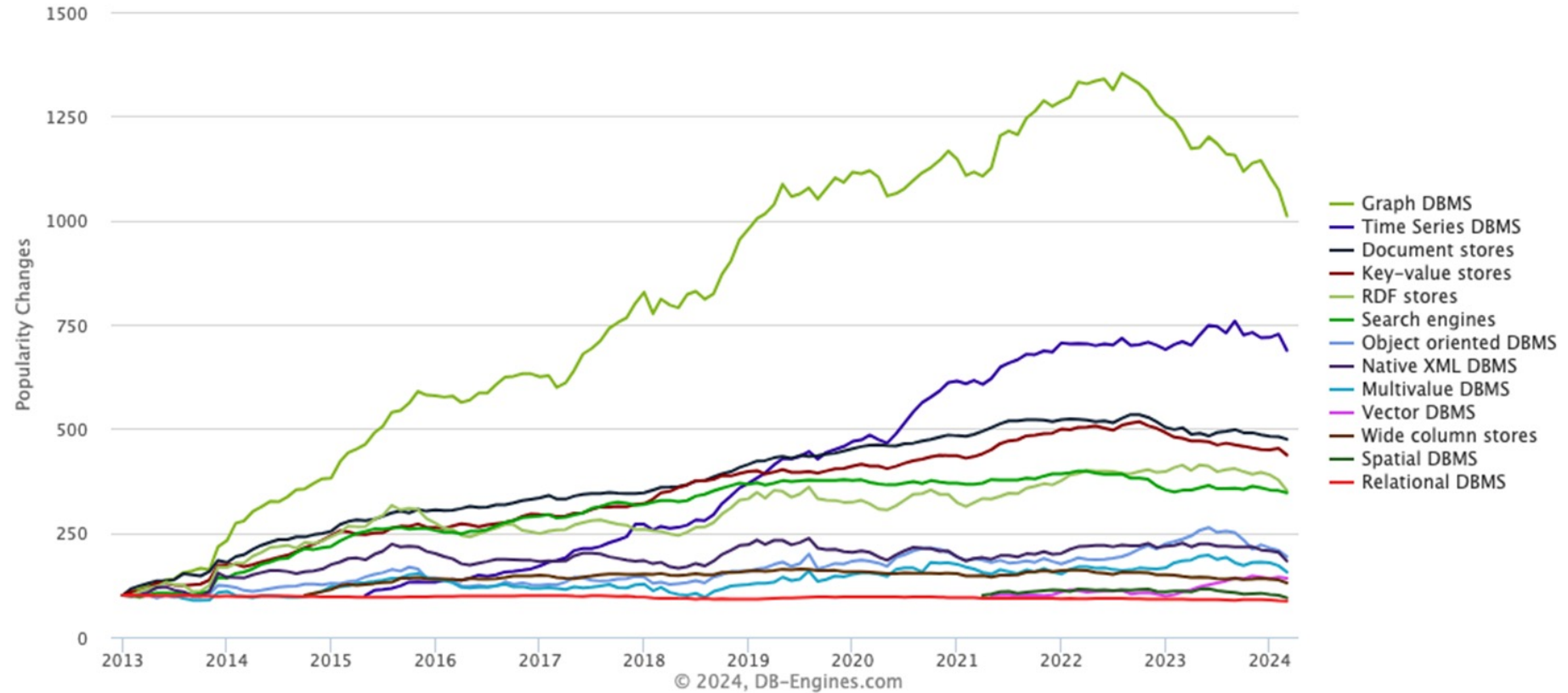
- Reports

- Excel

- Documentation

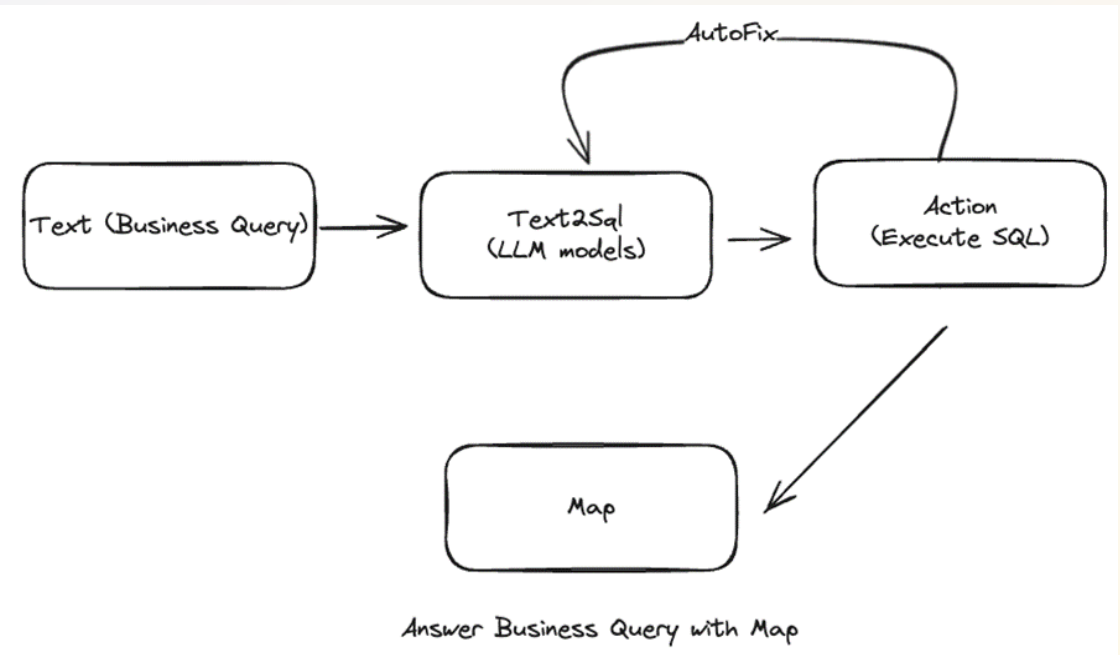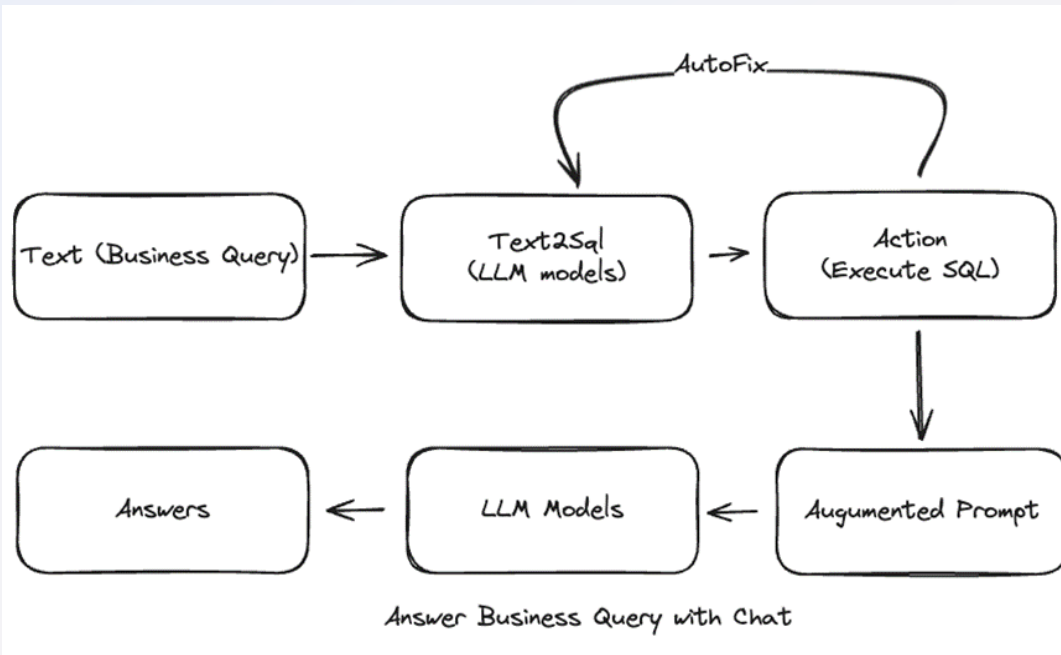- Databases

- **They all can be settled in Relational DBMS**

Goal:

I'd like to automate extracting answers from my
data sources for my business queries.

How?

Application Development

Answer Business Query with Chat

Answer Business Query with Map

Application Development: Text2SQL

For a single table: Present the complete data contained within the table as prompt.

For a single table: Provide only the information about the data structure (columns and value statistics).

For multiple tables: Identify relevant tables, and compose SQL queries incorporating the structural details of the database.

Demo: Talk with One Table

Which suburb has the highest crimes in the past 5 years?

The suburb with the highest crimes in the past 5 years is Perth, with a total of 32368 crimes.

can you explain your answer

Based on the data retrieved from the database, the suburb with the highest number of crimes in the past 5 years is Perth, with a total of 32,368 crimes. This data is a summation of all types of crimes reported in the area over the specified period. It's important to note that this data does not necessarily indicate the current safety level of the suburb, as crime rates can fluctuate over time and are influenced by a variety of factors.

How many crime happen in Nedlands in 2021

In 2021, there were a total of 315 crimes reported in the suburb of Nedlands. This data is based on the official crime statistics retrieved from the database. It's important to note that this number represents the total of all types of crimes reported in the area for that year.

How many crimes happen in Nedlands in 2021

In 2021, there were a total of 315 crimes reported in the suburb of Nedlands. This data is based on the official crime statistics retrieved from the database. It's important to note that this number represents the total of all types of crimes reported in the area for that year.

Among them how many different types

In 2021, there were 8 different types of crimes reported in the suburb of Nedlands. These include Assault (Non-Family), Drug Offences, Dwelling Burglary, Non-Dwelling Burglary, Property Damage, Robbery, Stealing, and Stealing of Motor Vehicle. The most common type of crime was Stealing, with 191 reported cases.

What's the Stealing trend for Nedlands in the past 5 years?

The trend of stealing crimes in Nedlands over the past 5 years shows a general decrease. In the 2018-19 financial year, there were 284 reported stealing crimes. This number slightly decreased to 282 in the 2019-20 financial year. A significant drop was observed in the 2020-21 financial year with only 192 reported cases. The number further decreased to 177 in the 2021-22 financial year. However, there was a slight increase in the 2022-23 financial year with 191 reported cases. Despite the recent increase, the overall trend over the past 5 years is downward.

how many crimes in Nedlands in the past five years?

In the past five years, there have been a total of 2048 crimes reported in the suburb of Nedlands. This data is based on the official crime statistics retrieved from the database. It's important to note that this number represents the total of all types of crimes reported in the area for that period.
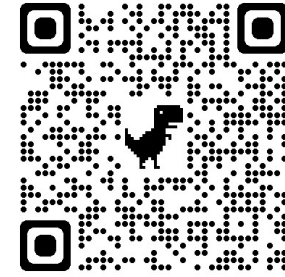
Demo: Talk with Multiple Tables
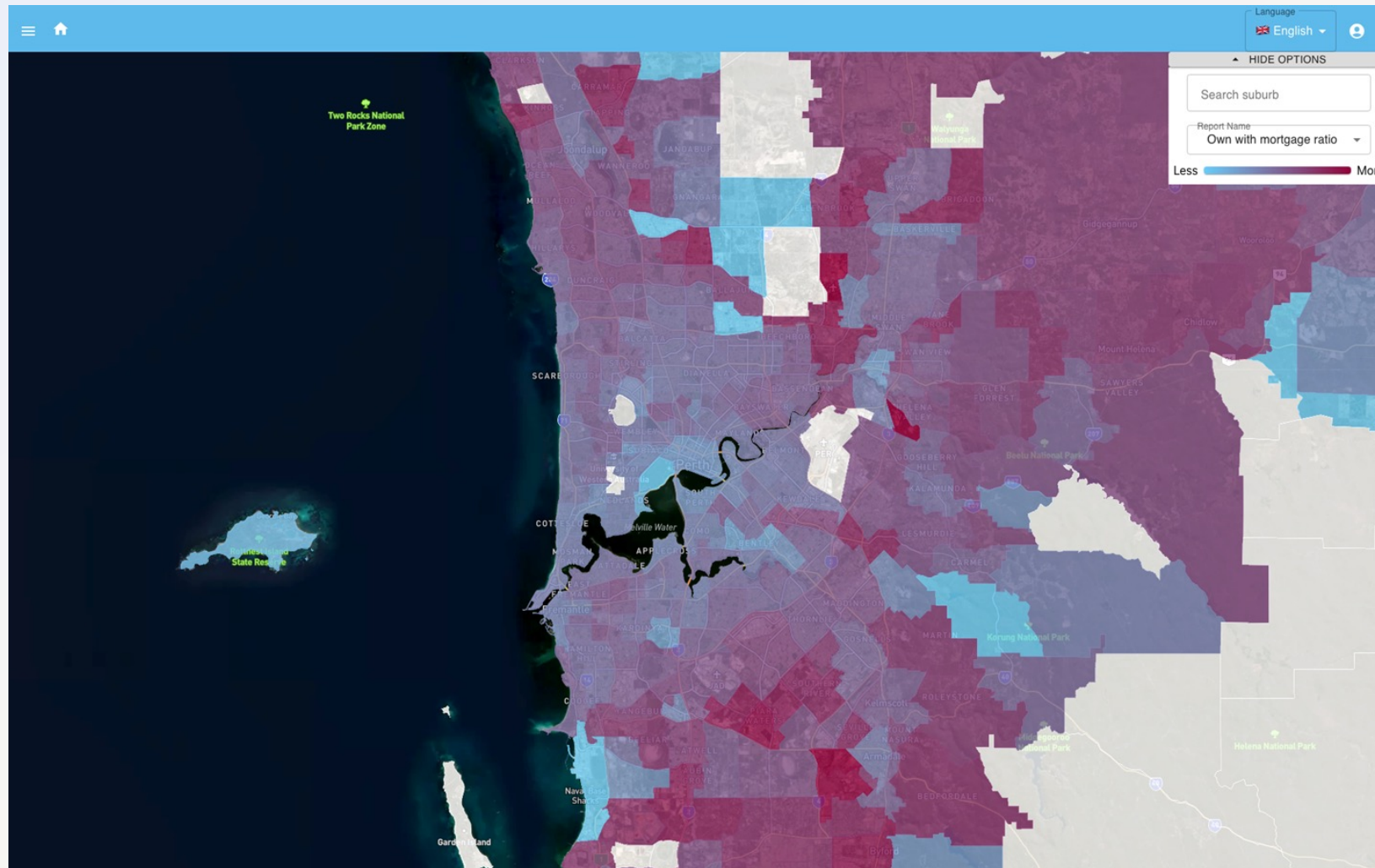
Model Accuracy
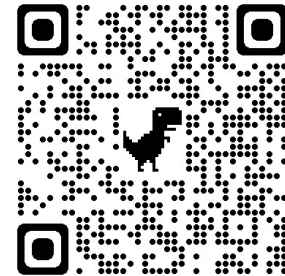
Latency
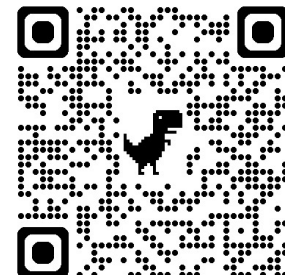
- Product

  - Chat2Map

  - Stream Chat Response

- Research

  - Implement it with Open Source LLM

LinkedIn

Demo

WA Data & LLM Platform

Call for Collaboration

For Industry Partners

- Prototype Development

- Cost Efficiency

- Talent Access

For Students

- Solve real world problem

- Industry exposure

- Mentorship

From Research to Reality

Thank You

Q & A

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