# Entities with Quantities: Extraction, Search, and Ranking

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## Motivation

- **Quantity query**: *"cars with price less than $99k"* — translate → **Qquery** = $(t^*; q^*; X^*)$

**What we expect**

Porsche 911 Carrera
$89,400

Chevrolet Camaro ZL1
$61,500

Ford Shelby GT350R
$67,135

etc.

**Standard search engines give**

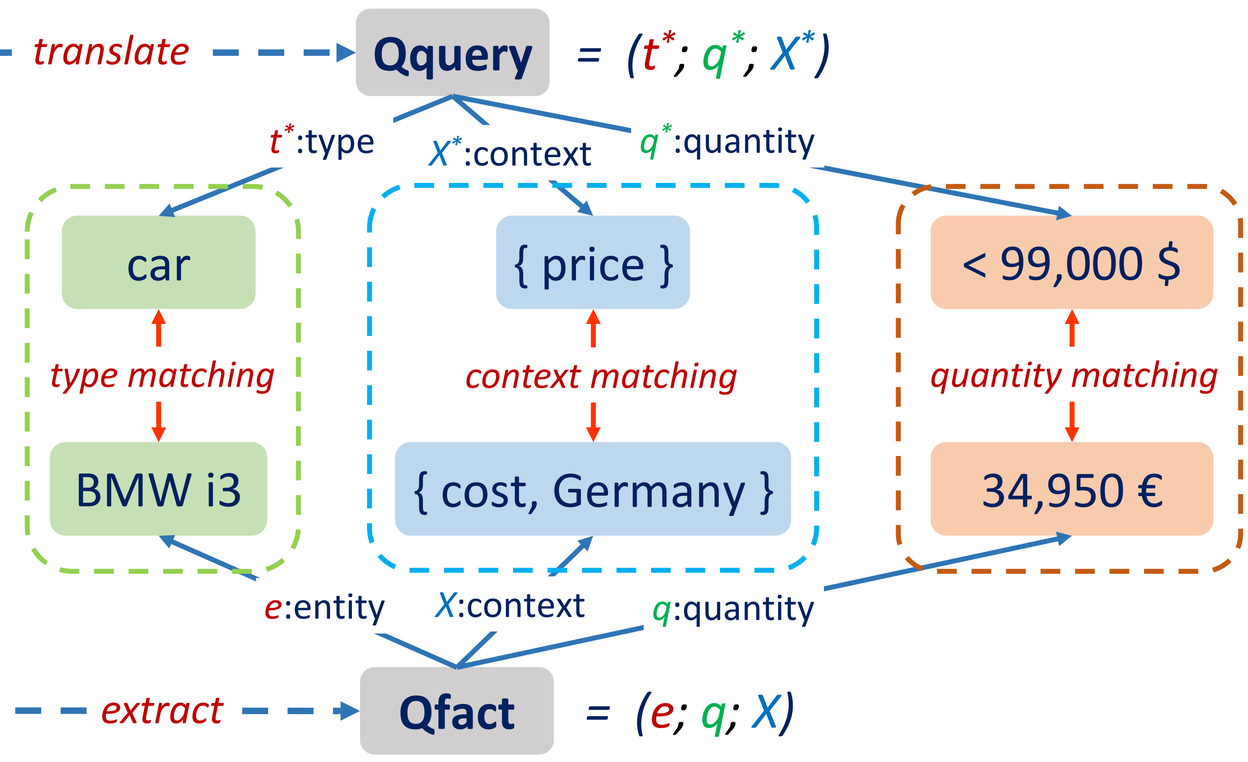
360 F1 Spider all time new low price sold at $99k | Page 2 ...
https://www.ferrarichat.com › ... › Model Specific Discussions › 360/430
These are great **cars** to drive and enjoy no matter what the **price**. ... 599s,etc have gone down as well so you could consider trading up for alot **less than** before.
More results from www.ferrarichat.com

These 6 classic vehicles are sliding in value - Hagerty
https://www.hagerty.com › articles-videos › articles › 2019/06/19 › 6-class...
Jun 19, 2019 - As tastes change in the collector **car** hobby, so do **prices**. ... There are Cartier wristwatches that **cost** more **than** what the world's best Cartier Edition Continental is ... More comfortable but **less** exciting and a little slower **than** the equivalent Lamborghinis and ..... I would love to find a decent Espada for $99K

Comments on: The 2020 Lotus Evora GT Is Quicker, Lighter, and ...
https://backfires.caranddriver.com › forums › posts
Jul 26, 2019 - 20 posts - 18 authors
So only 50% more than the C8 for Lotus's legendary reliability. .... the FE4 suspension and level 3 sport seats will still **cost** far **less than** $99k
The 2020 Lotus Evora GT Is Quicker, Lighter, and ... 26 Jul 2019
2018 Jeep Grand Cherokee SRT / Trackhawk - **Car** and ... 2 May 2018
More results from backfires.caranddriver.com

- ➢ **Objective**: Understanding of Quantities

## Computational Framework



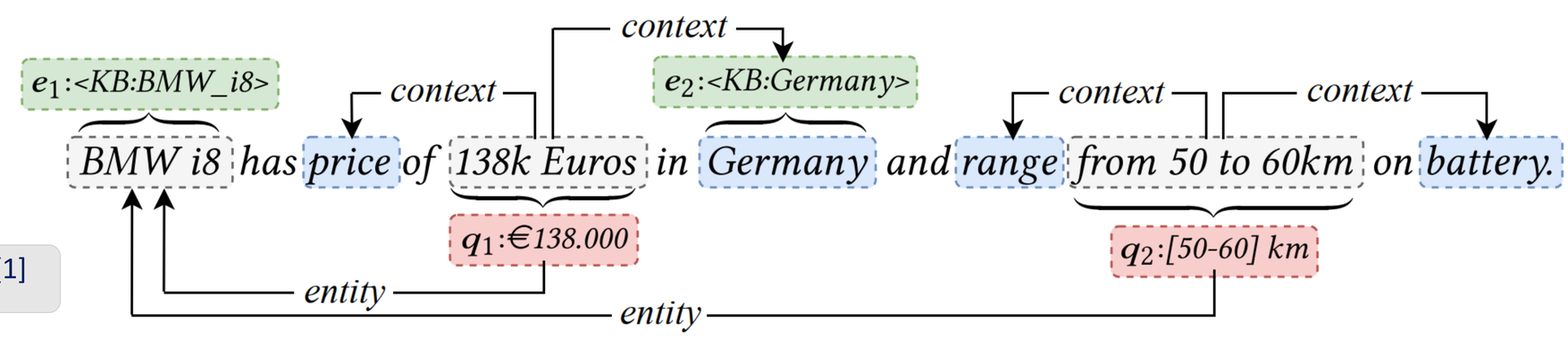

- ➢ Qfact Extraction & Qquery-Qfact Matching [1]

## Qfact Extraction from Text

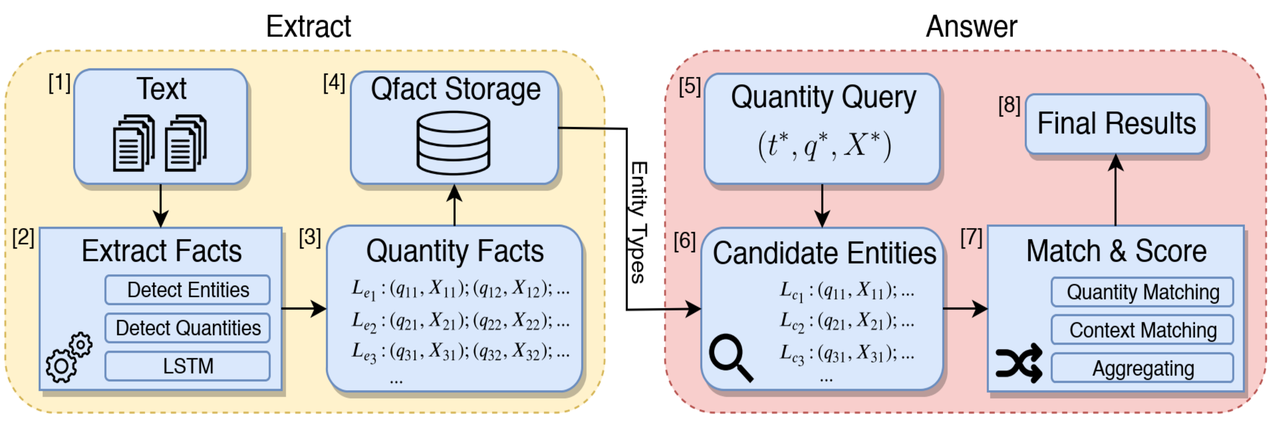
**Three steps:**

- ➢ Entity Disambiguation [2]
- ➢ Quantity Detection [3]
- ➢ Neural-based Qfact Extraction [1]

For each quantity, find its linked entity and context

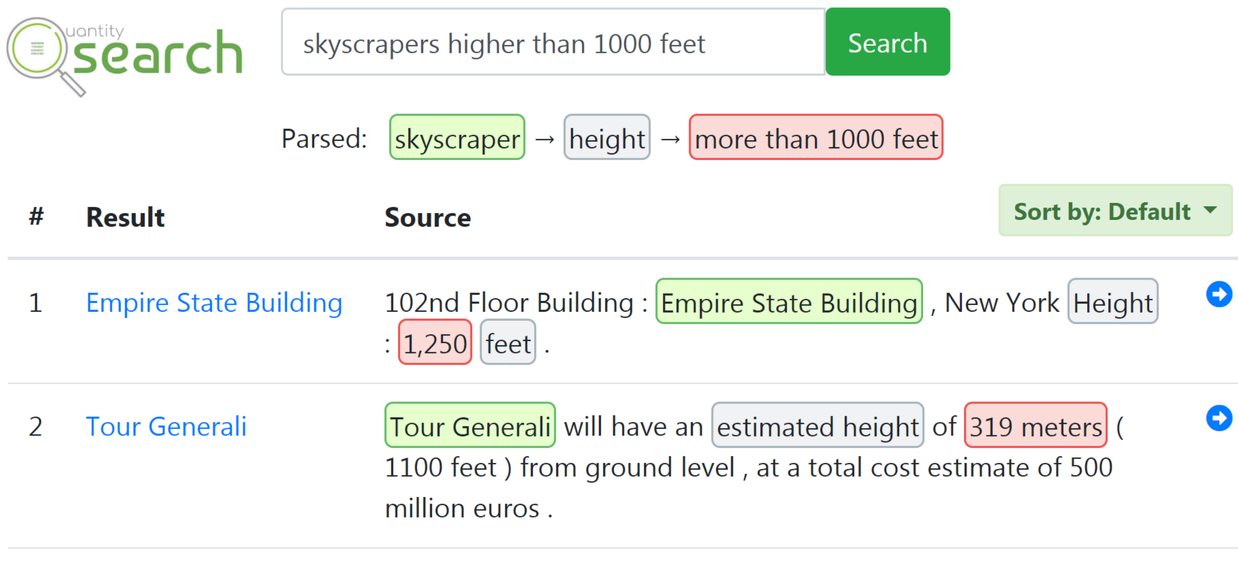



## System Overview




## Qsearch Interface

**URL:** *https://qsearch.mpi-inf.mpg.de/*



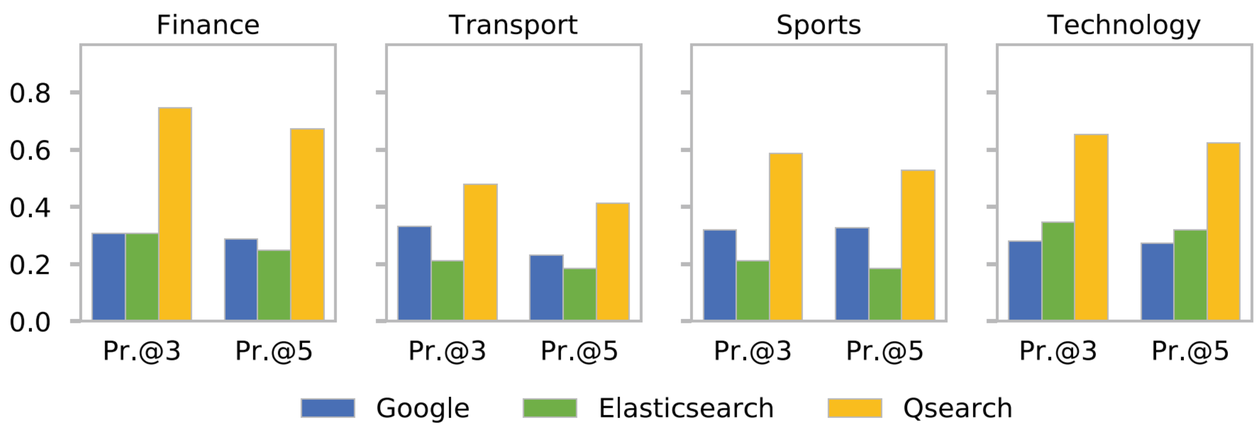

## Evaluation

**Datasets:** STICS, New York Times, Wikipedia

**Query Domains:** Finance, Transport, Sports, Technology

**Metrics:** Precision@K, Hit@K, MRR

**Baselines:** Google, Elasticsearch




## References

[1] V. T. Ho et al. Qsearch: Answering Quantity Queries from Text. ISWC 2019.
[2] J. Hoffart et al. Robust disambiguation of named entities in text. EMNLP 2011.
[3] S. Roy et al. Reasoning about quantities in natural language. TACL 2015.

MAX-PLANCK-GESELLSCHAFT
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