Fraunhofer FIT

RWTH AACHEN UNIVERSITY

Knowledge Graphs Praktikum (KGLab)

HELLO!

I am Michael Cochez

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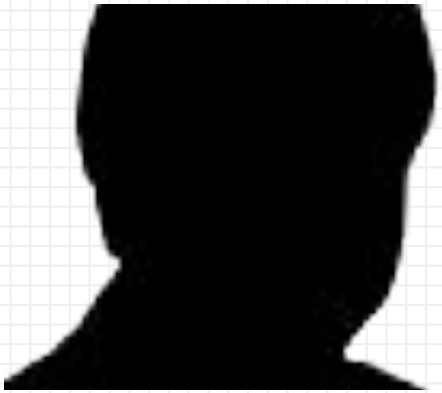

HELLO!

I am Oya Beyan

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Past Research Work

Machine Learning / Data Mining

Clustering

Classification

Anomaly Detection

Max. Frequent Patterns

Taxonomy Induction

Stream Sampling

Knowledge Representation

Semantic Web

Ontology Matching

Knowledge Evolution

Prototypes

Knowledge Graphs

Other

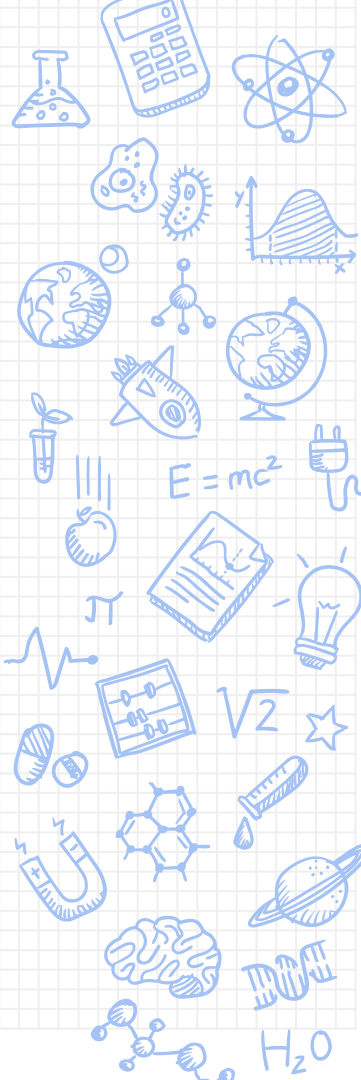
Medical Informatics

Multi-Agent Systems

Multi-channel communication

Indeterminacy Reduction

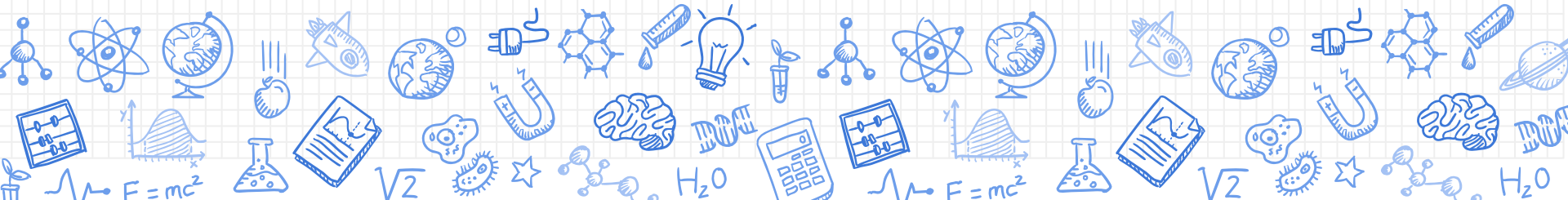
Use of VCS in education settings



Why?

We use knowledge graphs all the time ...

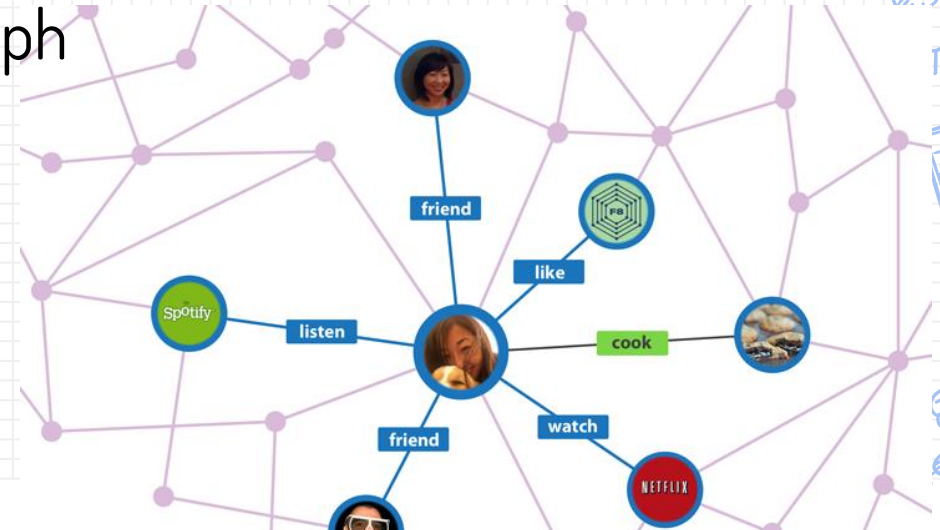
but we don't know it.



When was the last time you ...

- ✘ **reconnected with a friend?**

- Facebook Social Graph



http://www.businessinsider.com/explainer-what-exactly-is-the-social-graph-2012-3

When was the last time you ...

- ✘ reconnected with a friend?
- ✘ **visited a doctor?**

IBM Watson

Next comes the “ingestion” process: Watson preprocesses the information, building indices and other metadata that make the content more efficient to work with. It may also create a knowledge graph to represent and leverage key concepts and relationships within a domain.

https://www.ibm.com/think/marketing/how-watson-learns/

When was the last time you ...

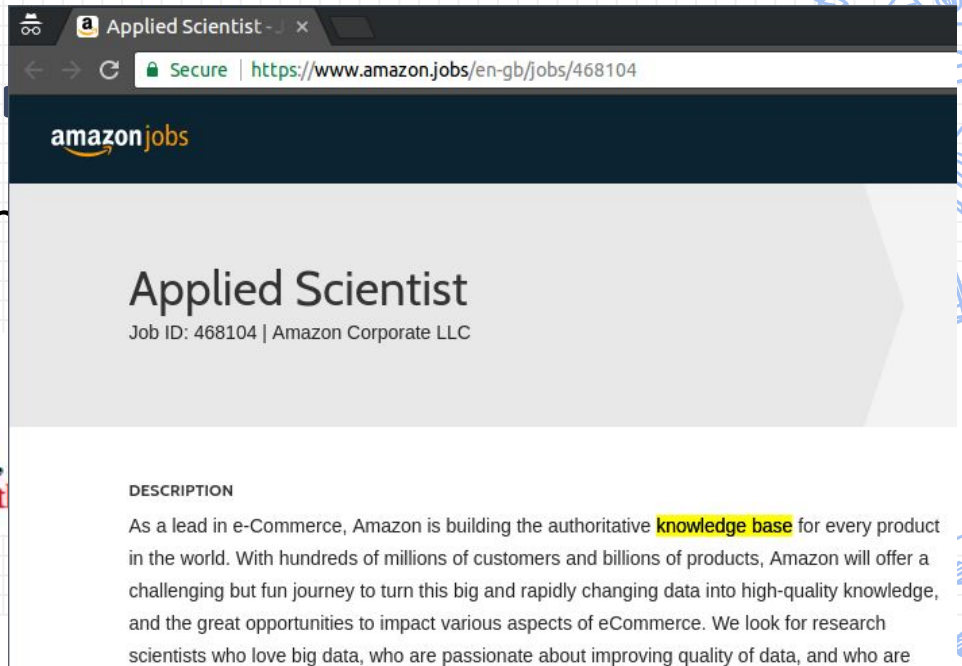
- ✘ reconnected with a friend?
- ✘ visited a doctor?
- ✘ **browsed through pr**

Amazon Product Graph

Xin Luna Dong

I am a principal scientist at Amazon since July 2016,
hire great scientists and engineers to build the aut

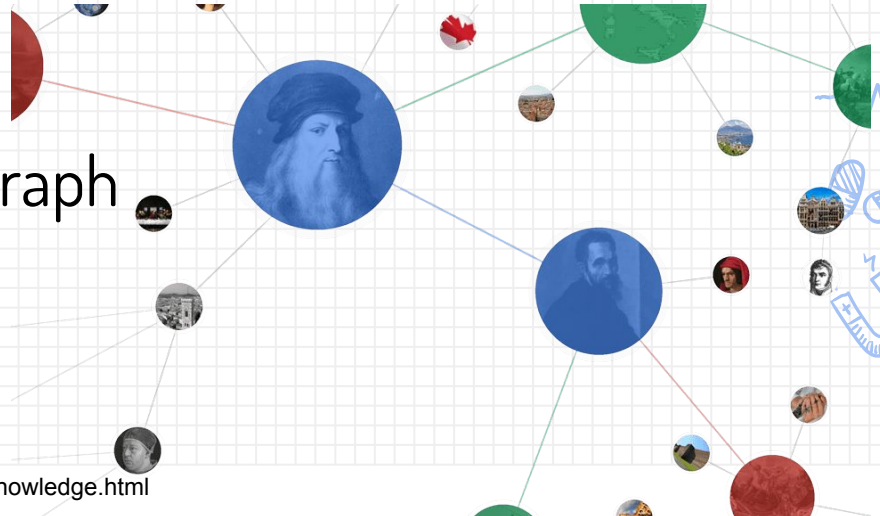
http://lunadong.com/



When was the last time you ...

- ✘ reconnected with a friend?
- ✘ visited a doctor?
- ✘ browsed through products in a webshop?
- ✘ **did a web search?**

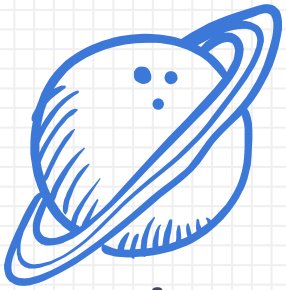
Google Knowledge Graph



https://www.google.com/intl/es419/insidesearch/features/search/knowledge.html

When was the last time you ...

- ✘ browsed through products in a webshop?
- ✘ reconnected with a friend?
- ✘ visited a doctor?
- ✘ did a web search?

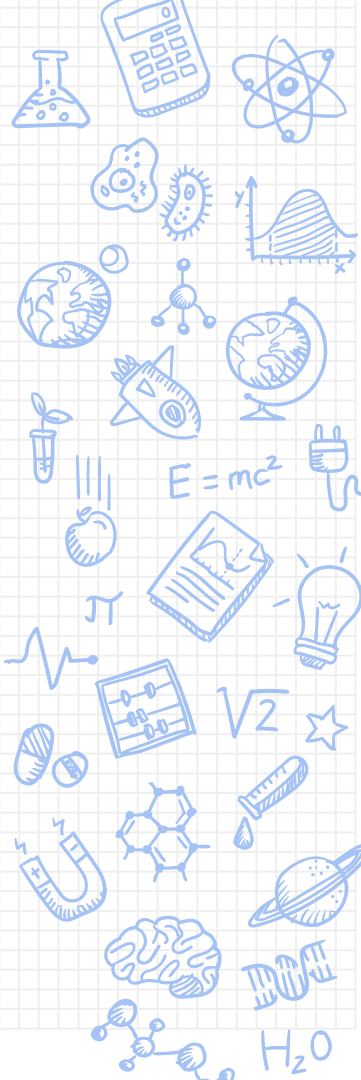


Knowledge graphs are all around us.

Other examples: Cyc, Freebase, DBPedia, Wikidata, YAGO, Thomson Reuters, Microsoft Satori, Yahoo KG, Springer, ...

Many open research problems

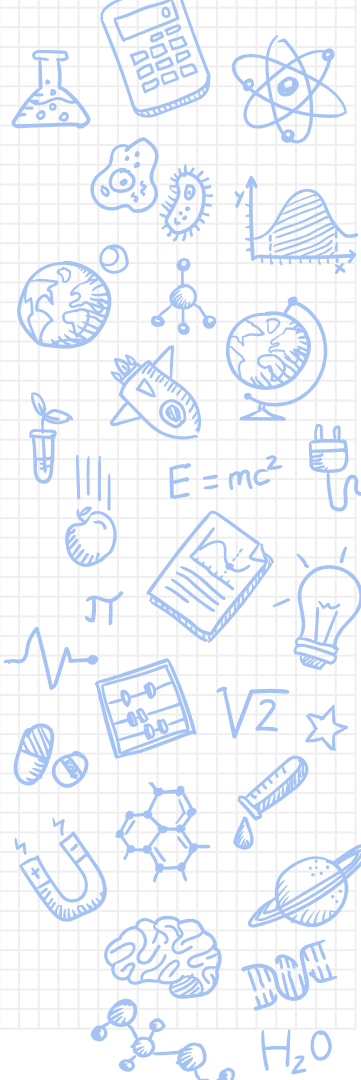
- ✘ Knowledge acquisition & fusion
- ✘ Growth: knowledge graphs are incomplete
- ✘ Validation: knowledge graphs are not always correct
- ✘ Interface: how to make it easier to access knowledge?
- ✘ Intelligence: can AI emerge from knowledge graphs?
- ✘ How to use KG data for ML?



What will you learn?

What will you learn?

- ✘ Software development within a team
- ✘ Learning collaborative code development tools
- ✘ Have experience working with the industry
- ✘ Learning by doing : Knowledge Graphs



Course parts and grading

Tasks

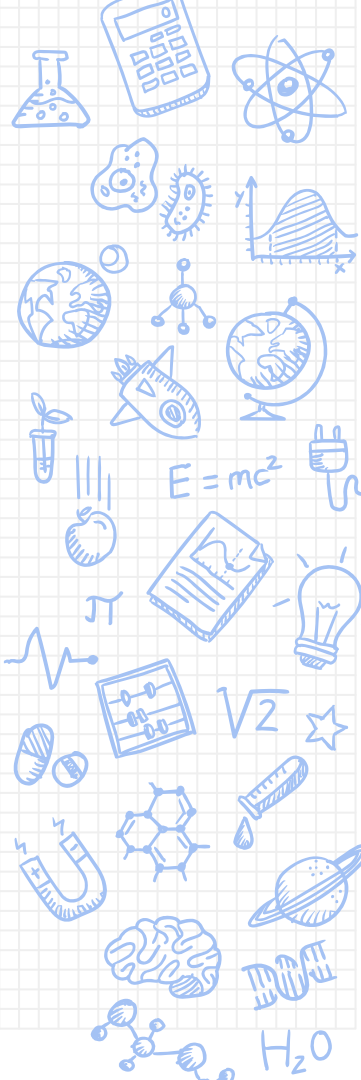
- 4 or 5 tasks
- Assigned roughly biweekly
- Individual

- 40% of the grade

Final projects

- Topics will be introduced
- Multiple weeks
- Group work

- 60% of the grade



THANKS!

Any questions?

You can find the course material at

- https://datalab.rwth-aachen.de/KG Lab/
- michael.cochez@fit.fraunhofer.de

Credits

Special thanks to the many people with whom I had inspiring discussions on embeddings, especially the researchers at Mannheim University.

Besides, we used the following resources:

- ✘ Presentation template by SlidesCarnival
- ✘ Photographs by Unsplash