ASSESS
Automatic Self-Assessment
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1. Introduction
RDF & The educational domain...
A long term goal ...

✗ generation of education material directly from RDF data

✗ possible use cases:
  ○ preparation of tests on a particular domain
  ○ training of employees on novel products
  ○ generation of tests for exams
  ○ casual gaming
  ○ ...
What is Albert Einstein's birthplace?

- Bethlehem, PA
- Ulm
- Berlin
- Vadakadu
2. The ASSESS System
Our process is easy?

Linked Data ➔ ASSESS ➔ Quiz
How it works

**Domain Retrieval**
- entity selection based on a given domain of interest
- e.g. entity, class, ...

**Data Selection**
- choose appropriate triples/subgraphs
- heuristics, e.g. popularity, informativeness

**Question & Answer Generation**
- transform triples into questions
  - MC
  - Yes/No
  - Jeopardy
- verbalize the answers
What is Albert Einstein's birthplace?

- Bethlehem, PA
- Ulm
- Berlin
- Vadakadu
How to verbalize a triple pattern?

:Albert_Einstein dbo:birthPlace :Ulm
How to verbalize a triple pattern?

:Albert_Einstein dbo:birthPlace :Ulm

NNP’s ‘be’ NNP
How to verbalize a triple pattern?

:Albert_Einstein dbo:birthPlace :Ulm

NNP’s NN ‘be’ NNP

Albert Einstein’s birthplace is Ulm.
How to verbalize a triple pattern?

:Albert_Einstein dbo:birthPlace :Ulm

NNP’s NN ‘be’ NNP

Whose birthplace is Ulm?
How to get correct answer(s)?

SELECT ?x WHERE {
  :Albert_Einstein dbo:birthPlace ?x .
}

:Ulm
SELECT DISTINCT ?x WHERE {
 [] dbo:birthPlace ?x .
 FILTER NOT EXISTS {
    :Albert_Einstein dbo:birthPlace ?x
 } }

:Berlin, :London, :Bethlehem,PA, :Vadakadu, ...
Whose birthdate is March 14, 1879?

- Gaius Julius Caesar
- Abel Adams
- Steven Spielberg
- Albert Einstein
Baruch Spinoza influenced who?

- Albert Einstein
- Friedrich Nietzsche
- Karl Marx
- Siegmund Freud
Baruch Spinoza

Benjamin Lee Whorf

Ulm

Physics

Germany

1879-03-14

country

influenced

influencedBy

birthPlace

field

birthDate
Whose birthplace is a town whose country is Germany?

- [ ] Kylie Minogue
- [x] Albert Einstein
- [x] Barack Obama
- [x] Angela Merkel

ASSESS
Is Albert Einstein's birthplace Sydney?

✘ YES
✘ NO

ASSESS
This scientist was born in Ulm. His birthdate is March 14, 1879 and he is known for Mass Energy Equivalence.

✘ Kylie Minogue
✘ Albert Einstein
✘ Barack Obama
✘ Angela Merkel
INSTRUCTIONS FOR USE

ASSESS is implemented in Java and available as an open source GitHub project licensed under the Apache 2 license.

Maven Project  REST Service

More info on how to use ASSESS at https://github.com/AKSW/SemWeb2NL/wiki/ASSESS
3. Evaluation
How good is ASSESS?
How good is ASSESS?

We don't know – yet
How good is the NLG of ASSESS?
How good is the NLG of ASSESS?

WE ALREADY KNOW!
How good is the NLG of ASSESS?

- 120+ participants in previous user study
- measures: fluency and adequacy (score between 1 and 6)

**Fluency**
4.56 ± 1.29

**Adequacy**
5.31 ± 1.08
4. Summary
What ASSESS can do

- ASSESS generates questions out of Linked Data
- MC, Yes/No and Jeopardy questions
- Different complexity is possible
What ASSESS can't do – yet

- no proper model for difficulty of
  - a single question
  - a set of questions
- complex domain definitions in a simple way
- multilingual support
- ...

What makes a question difficult?

- domain
- entities, concepts and properties used in question
  - Which vein drains from Azygos vein?
- possible answer space
  - Which person was born in Ulm?
  - Which scientist was born in Ulm?
  - Which scientist in the field of Physics was born in Ulm?
THANK YOU!

Any questions?
Credits

Special thanks to all the people who made and released these awesome resources for free:

✖ Presentation template by SlidesCarnival
✖ Photographs by Unsplash