M2 Software Project

Online App for Knowledge Substantiation

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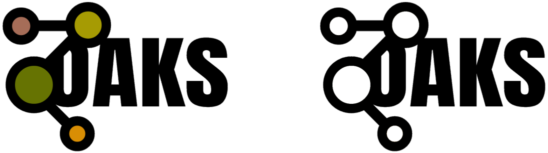
Product
Brand



The oak is a symbol of **strength**, **morale**, **resistance** and **knowledge**.

Our Objective

Creating a **reliable** app that double-checks the **veridicity** of claims proposed by news pieces.

Product
Development

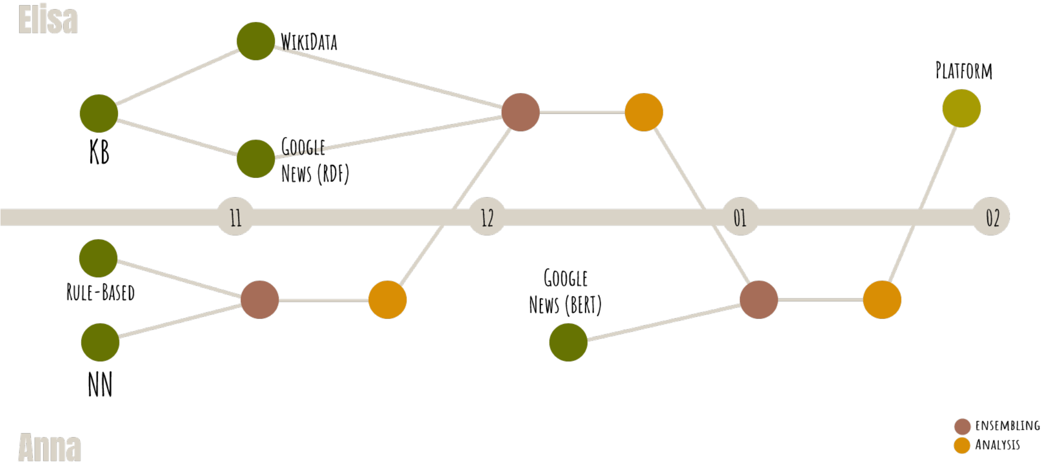


Figure: Timeline

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Knowledge Base

Module Structure

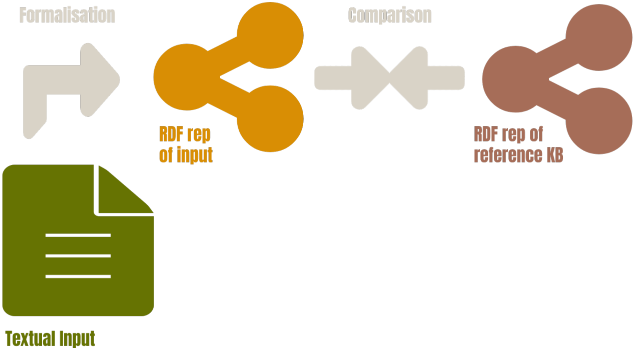

Figure: The module takes text as input, converts it to an RDF graph, and compares it to an RDF representation of a reference Knowledge Base.

Knowledge Base

Text to RDF

Input: *colourless ideas sleep furiously*

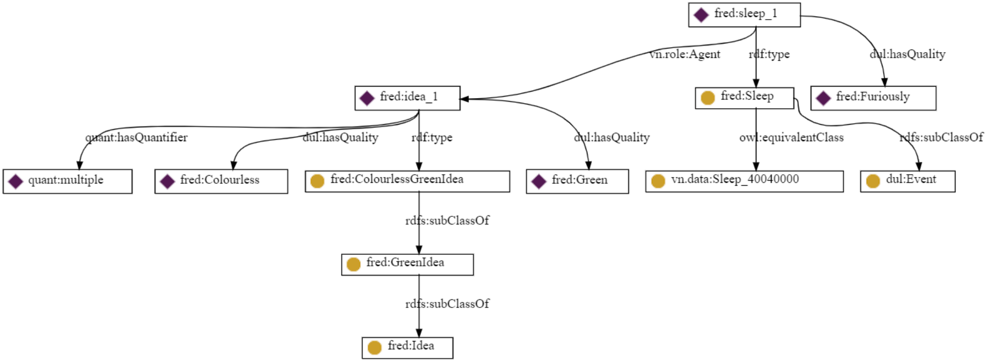

Figure: Example of text to RDF conversion using FRED.[3]

Knowledge Base

RDF Comparison [4]

- Performing **entity comparison**
- SPARQL **similarity** queries
  - Query Reverse Engineering [1]
  - Least Common Subsumers in Description Logic ontologies [2]
- SPARQL **difference** queries (coNP-complete)

Rule-based Approach

Fake News Features

- ✓ spelling mistakes
- ✓ lexical repetitions
- ✓ plural forms
- ✓ loaded language
- × misrepresentation of facts
- × links to an unreliable source
- × rhetorical questions
- × excessive usage of exclamation marks and imperative mood
- × punctuation errors
- × contrast of the "we" and "they" concepts
- × throwbacks

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Dataset

LIAR-PLUS dataset

- **Training set** 10,269
- **Validation set** 1,284
- **Testing set** 1,283
- **Main topic** politics (economy, healthcare, taxes, federal budget, education, jobs, state budget, candidates biography, elections, and immigration)

- **Average sentence length** 20
- Similar vocabulary for all classes
- **Classes**
  - half-true: 2114
  - false: 1995
  - mostly-true: 1962
  - true: 1676
  - barely-true: 1654
  - pants-fire: 839

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Coming Up...

For next month...

- Implement **text-to-RDF** conversion
- Implement **NN module** method
- Research **RDF coparisons** algorithms
- Start **ensembling**

Bibliography I

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[2] Franz Baader, Baris Sertkaya, and Anni-Yasmin Turhan. “Computing the least common subsumer w.r.t. a background terminology”. In: *Journal of Applied Logic* 5.3 (2007). Selected papers from the 9th European Conference on Logics in Artificial Intelligence (JELIA ’04), pp. 392–420. ISSN: 1570-8683. DOI: https://doi.org/10.1016/j.jal.2006.03.002. URL: https://www.sciencedirect.com/science/article/pii/S1570868306000036.

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Bibliography II

[4] Alina Petrova et al. “Entity Comparison in RDF Graphs”. In: *The Semantic Web – ISWC 2017*. Ed. by Claudia d’Amato et al. Cham: Springer International Publishing, 2017, pp. 526–541. ISBN: 978-3-319-68288-4.