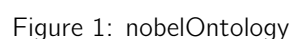


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Mapping of the open data in RDF

We mapped the data into RDF format in the following way.



We had to address the issue of duplicates to ensure that there were no resources in the RDF dataset with the same URI representing the same entity. This is a critical aspect of maintaining data integrity and avoiding inconsistencies in the ontology. Therefore, before adding a new resource to the RDF dataset, such as a scientific journal, we performed a thorough check to confirm that the resource was not already present in the graph. To facilitate this, we defined a series of functions, such as *handle_city* and *handle_org*.

In addition to addressing duplicates, we also encountered the challenge of discrepancies in naming conventions between the data in our open datasets and the EulerSharp ontology. In particular, some country names in our datasets differed from those used in the EulerSharp ontology, e.g. "United States" and "United States of America", so we had to manually handle these specific cases.

In addition, we wrote a script (*topic_extraction.py*) to extract the most significant words from the texts that define the abstract of a scientific paper and the motivation for the award of a Nobel Prize. The script was developed to generate shorter, more concise values for properties *motivationAbstract* and *motivationTopics*. For instance, long descriptions such as "in recognition of the extraordinary services he has rendered by the discovery of the laws of chemical dynamics and osmotic pressure in solutions" are transformed into more focused terms like "chemical dynamics osmotic pressure solutions." This approach enhances the dataset's efficiency by reducing the length of textual values while preserving the key concepts relevant to the Nobel Prize motivation and the research topics.

Main Statistics

The following statistics summarize the key features of the RDF dataset created from the ontology.

- **Entity and Triple Counts:**

- Total number of RDF triples: 207,258
- Number of unique entities:
 - * Person: 6,677
 - * Researchers: 4,919
 - * Laureates: 1,785
 - * Organizations: 355
 - * Papers: 5,002
 - * Journals: 18,616
 - * Conferences: 306
 - * Cities: 881
 - * Countries: 246
 - * Nobel Prizes: 581
 - * Funding: 2,747

- **Laureates and Nobel Prizes:**

- Researchers that won a Nobel Prize: 27
- Total Nobel Prizes awarded: 581
- Prize categories: 6 (Physics, Chemistry, Medicine, Literature, Peace, Economics)
- Gender distribution of laureates:
 - * Male: 1664 (94.6%)
 - * Female: 94 (5.4%)