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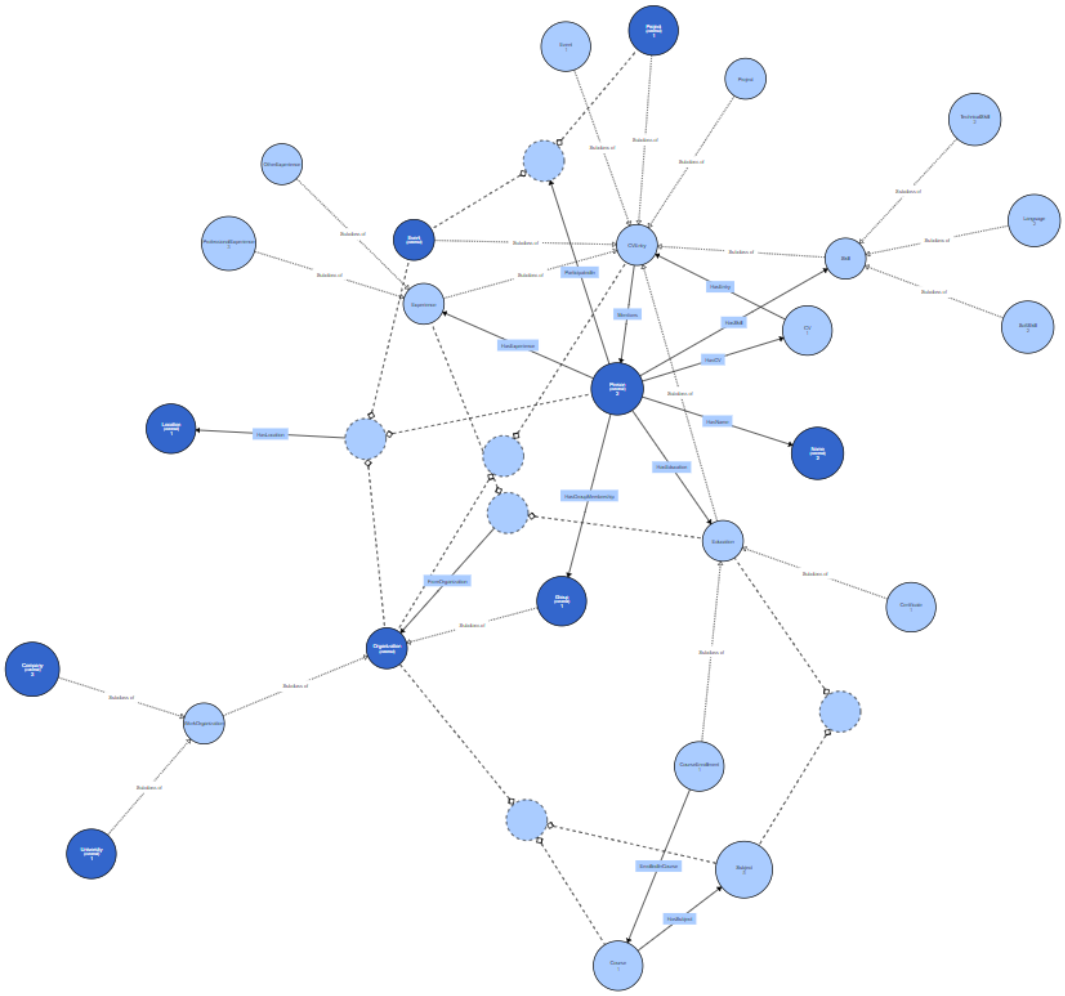
Course: Markup Languages and Document Processing

Ontology:

Global Visualization:



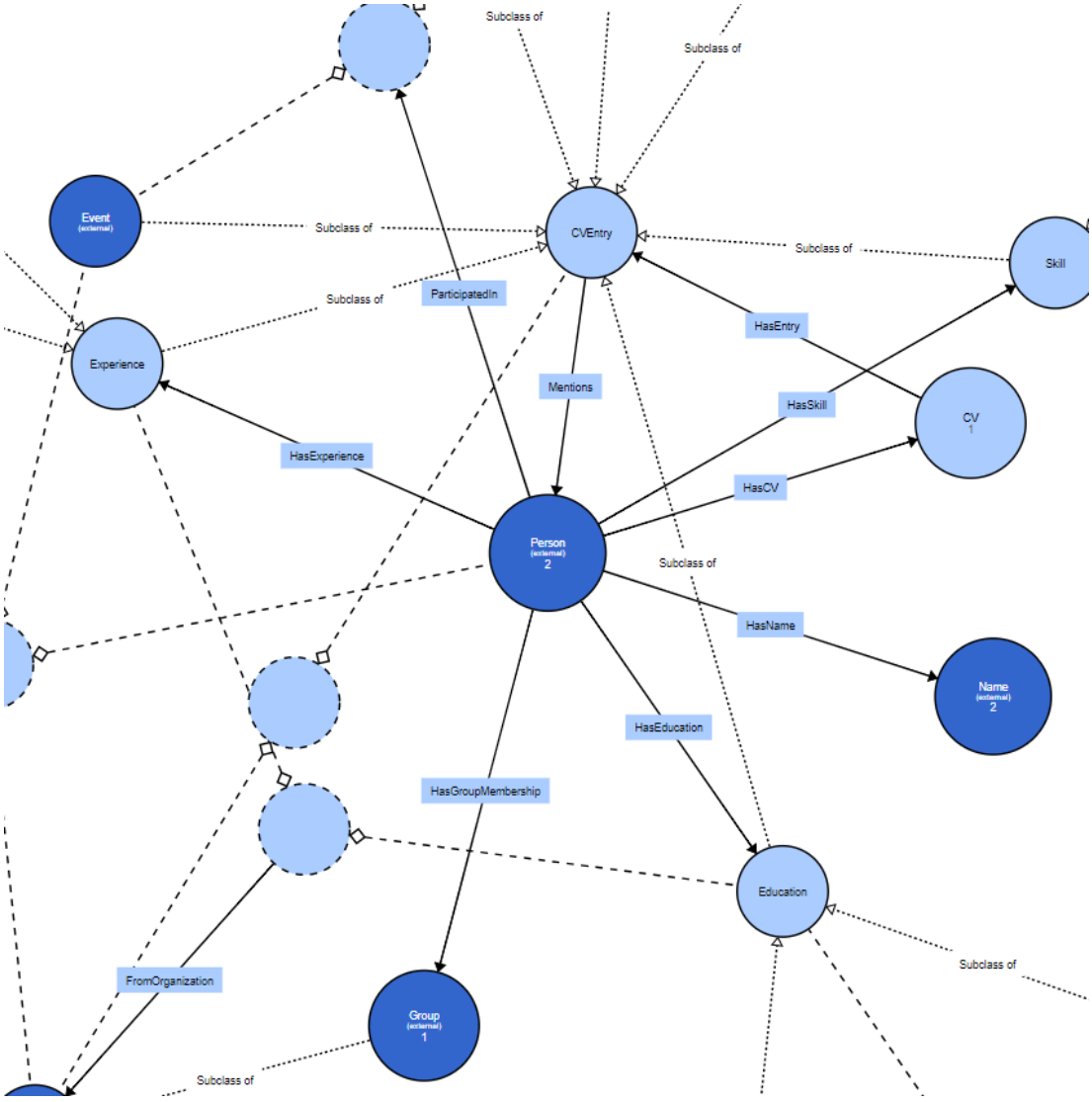
The owl file is hosted in a github public project and the **visualization is publicly available** here: http://www.visualdataweb.de/webvowl/#iri=https://raw.githubusercontent.com/lapd-user/cv-ontology/main/cv-ontology.owl

Introduction:

A Curriculum Vitae (CV) usually consists of personal information, education, work experience, skills, events, certifications, etc. This work intends to create an ontology using the Manchester OWL Syntax that would be capable of extracting useful data and aggregate it in intelligent ways. All the practical usage examples will be discussed further below.

Description:

Since this description should be brief I would just like to mention two main classes: CV and Person.



Looking more closely, a Person has different object properties, like Skills, Education, Experience, … It also has some data properties including email, phone number, date of birth. A Person has also other object properties to use the Name and Location external resources from DBpedia. It also has some url's pointing to external content in the WWW, like their github url, linkedin url and also a profile image.

The other main class is CV which has only one Object property that consists of the various entries presented on a CV (CVEntry). This includes the Skills, Education, Certification, Experience, Events and Projects detailed on a CV. These are considered the main CVEntry classes but each one has different subclasses. For example, a Skill can either be a Technical Skill, a Soft Skill or a Language. More details can be found on the cv-ontology.owl file

Resources:

- Name from DBpedia: https://dbpedia.org/page/Name
- Location from DBPedia: https://dbpedia.org/page/Location
- Company from DBPedia: https://dbpedia.org/ontology/Company
- University from DBPedia: https://dbpedia.org/ontology/University
- Person from DBPedia: https://dbpedia.org/ontology/Person
- Project from DBPedia: https://dbpedia.org/ontology/Project
- Event from DBPedia: https://dbpedia.org/ontology/Event
- Group from DBPedia: https://dbpedia.org/ontology/Group
- Organization from DBPedia: https://dbpedia.org/ontology/Organization

Practical Usage:

Here is a full list of the most useful use cases of this ontology:

- Scan and extract entities from a CV to infer required information such as a person's skill, experiences, education, certifications, etc and convert it from unstructured data to structured data by representing this data on the Semantic Web.
- Ontologies can be used in many domains, including in various complex projects. (For example, Neo4J offers importing ontologies capabilities: https://neo4j.com/docs/labs/nsmntx/current/importing-ontologies/)
- It could be used by many companies in other to process jobs applications to see if each has certain requirements or in order to rank the applicants based on some parameters. This is extremely useful, since most companies receive hundreds of applications and cannot process them individually. This would reduce cost and save time, improving the overall process for both the employee and the employer.
- This ontology could also be used to see the networking of a candidate since each CVEntry can mention a Person. This can be useful to track if a candidate has deep roots in their industry, collaborating with different people in events, projects, etc.
- It also offers much more, like finding where most companies are located, aggregate averages of students from previous educational experiences to find the best colleges, analyze which skills are most common for a given position etc

Future work:

As a future work, this ontology could be further developed, entailing new entities and using more open source resources from DBpedia and other sources. With the existing entities one could add more data properties and connect more the different classes also.

References:

While the ontology was hand-made by me, it still considers different public published ontologies. The links in which this ontology was based on can be seen below:

- http://rdfs.org/resume-rdf/
- https://dgraux.github.io/supervision/Elezi_Msc_2020.pdf
- https://www.researchgate.net/publication/264814283_Using_ontology_for_resume_annotation