Question Answering and Chatbots

1st Practical exercise – Named Entity Recognition & Linking

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Text preprocessing

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There is a little impact if we apply this to DNNs, for example BERT. Text preprocessing doesn't affect the modern model's quality so much.

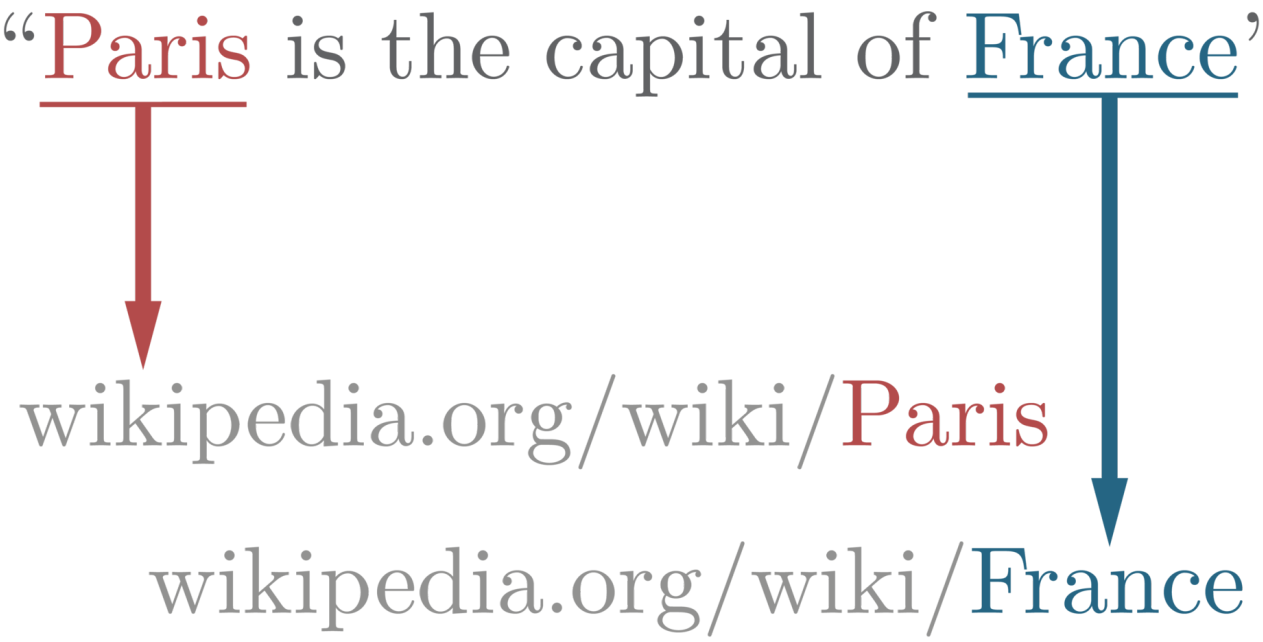
Natural Language Processing Today

Named Entity Linking (NEL)

Named Entity Recognition vs. Named Entity Linking?

Named Entity Linking (NEL)

NEL – is the task of determining unique identity to entities (people, locations, songs, etc.) mentioned in text.



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Tools NER: spaCy, StanfordNLP etc.
Tools NEL: DBpedia Spotlight, TagMe, AGDISTIS, etc.

Any questions?

Exercise 1

Part 1 (manual) – Select any 10 questions from the dataset according to your variant and do the following:

1. Translate them from English to your mother tongue (e.g., German, Chinese, etc.); please do no use machine translation (if possible).
2. Extract named entities manually from these questions (and translations) and determine their types (e.g., Person, Politician, Entertainer, Location, City, Company, etc.);
3. Put everything together in the structured JSON format.

Exercise 1

Part 2 (programming) – Depending on your exercise variant write a script, which takes for input a list of questions and outputs for each question:

1. Preprocessed question (tokenization, stopwords and special characters removing, lemmatization);
2. A dictionary {'text': 'type'} of recognized named entities from the question (use spaCy).
3. A dictionary {'uri': 'text'} of linked named entities from the question (use DBpedia Spotlight).
4. The format of the script output is a JSON.

Let's do the exercise. Ask me, if you have a question.

Plan for the Exercise 2: Question classification

Task: create a relation classification algorithm for relation prediction you can use rule-based or machine learning approach.
Question: "Who created Mona Lisa?" $\rightarrow$ Relation: `dbo:author` (Author/Creator/Was created by).
Integrate implemented algorithm into a **Web Service** (RESTful API):

- Input: textual question;
- Output: prediction (result of classification).

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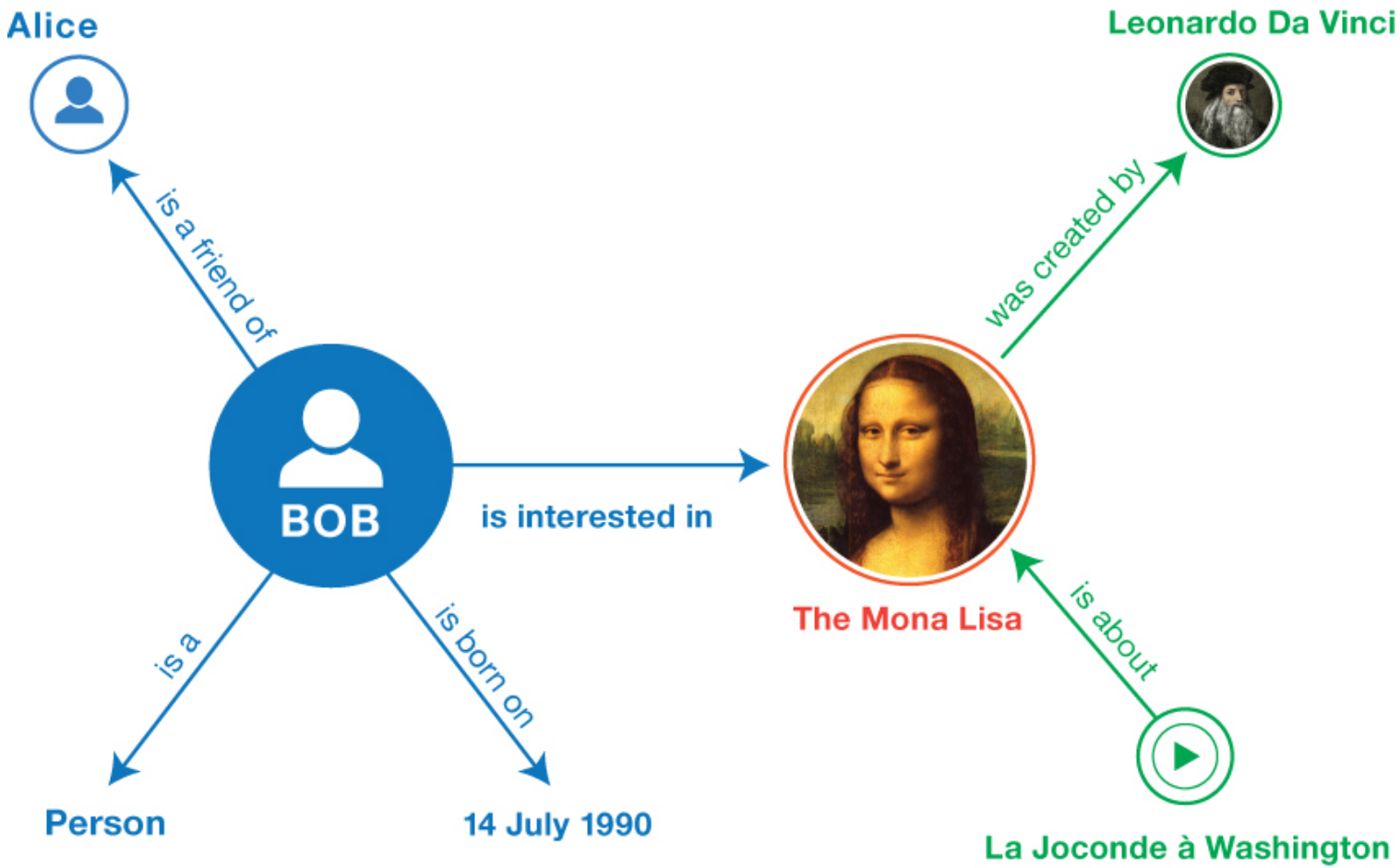

https://www.w3.org/TR/rdf11-primer/

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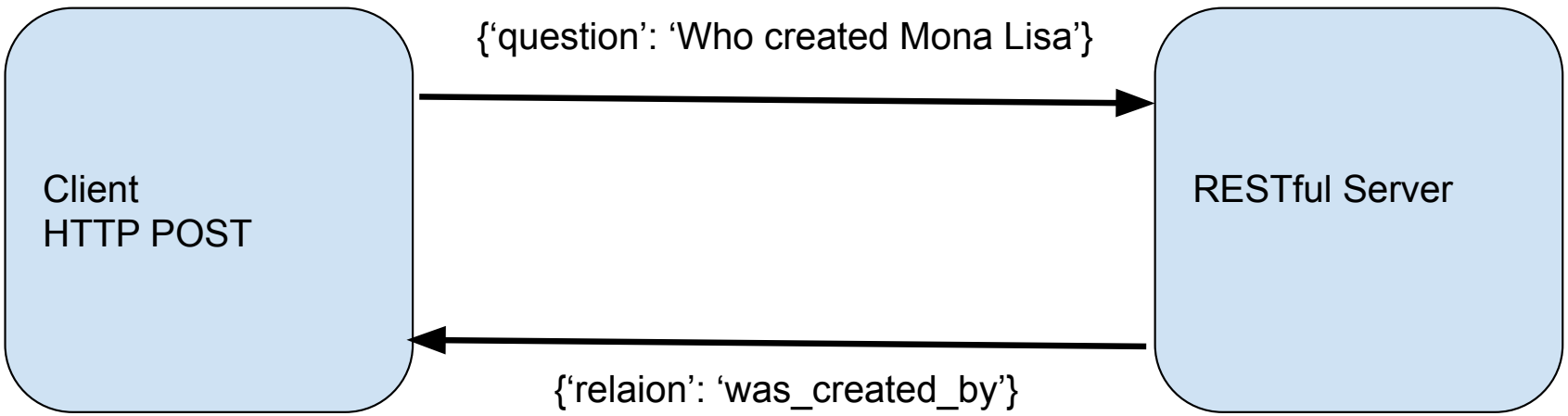

0 Introduction;

1 **NER & NEL**;

2 Question classification & Web service/API;

3 SPARQL queries over Knowledge Graphs;

4 Simple KGQA system – based on exercises 0, 1, 2, 3;

5 Qanary Framework – component oriented approach;

6 Simple ODQA system?;

7 Evaluation of QA systems.