Exercise sheet 5
Semantic Web & Chatbots

1 Semantic Web

Note: This is a group task and optional for hackathon participants. If you have attended to hackathon, please submit 2-3 slides explaining what you did there, if you do not want to do this exercise.

1.1 Resource Description Framework (7 points)

Pick an annotation from Fuegen, Mayrhofen or Seefeld. Visualize the RDF graph of the annotation with a drawing tool.

1.2 Regional Chatbot (23 points)

Develop a chatbot for a touristic region. Select a region based on the following formula: summation of the last digit of each group member's matrikel number mod 3. If the result is :

- 0: Make a chatbot for Fuegen (API Key: ryP28-_GZ)
- 1: Make a chatbot for Mayrhofen (API Key: Skoa8ZOf-)
- 2: Make a chatbot for Seefeld (API Key: BygT8ZuGW)

You can use NLU frameworks like api.ai or wit.ai for natural language understanding and generation as well as dialog management. All of these tools have extensive documentations and also community support (e.g. stackoverflow). It is advised to analyze the data provided via semantify.it API for schema.org types and properties used in the annotations. You can use any triple store with reasoning support (at least RDFS) for storing the data. Some examples are Apache Fuseki, Virtuoso, Ontotext GraphDB and Stardog. There are also semantic web application frameworks for many programming languages[1]. You will need to program an information manager which maps the data structure of the NLU framework of your choosing to SPARQL queries.

The submission should contain at least 3 dialogs with different topics (e.g. searching hotel room offers, asking for a restaurant in the user's vicinity). You can get inspired by the schema.org types used in the given data. Each dialog should contain at least 3 system-user utterance pairs. You can train your dialog models within the NLU framework with various natural language statements. (e.g. Where can I eat tonight? Does not have the word Restaurant or Cafe in it, but it can be received as restaurant/caffe search intent.)

In order to retrieve the data you can use the following endpoints:

- https://semantify.it/api/annotation/list/:apiKey - get the list of annotation UIDs (use the API Keys given above)
- https://semantify.it/api/annotation/short/:UID - get the full annotation by UID

As for the frontend of your chatbot, you can make your own custom development or use Facebook Messenger.

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[1] A non-exhaustive list: https://www.w3.org/2001/sw/wiki/SemanticWebTools