

Toward an Ontology-Based Chatbot Endowed with Natural Language Processing and Generation

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Context

With the last evolution of the web, several new means of communication have showed up. In the commercial domain, chatbot technologies are now considered as essential for providing a wide range of services (e.g. search, FAQ, assistance) to the end-user, and to make a client a faithful customer. We propose an on-going work on the definition and implementation of **SynchroBot**, an **ontology-based chatbot that relies on Semantic Web and NLP models and technologies to support user-machine dialogical interaction in the e-commerce domain**.

SynchroBot : A preliminary approach

ONLINE DEMO : <http://synchrobot.synchronext.com/SynchroBot-Gui/>

Question

Give me the address of a Nexus 5 seller ?

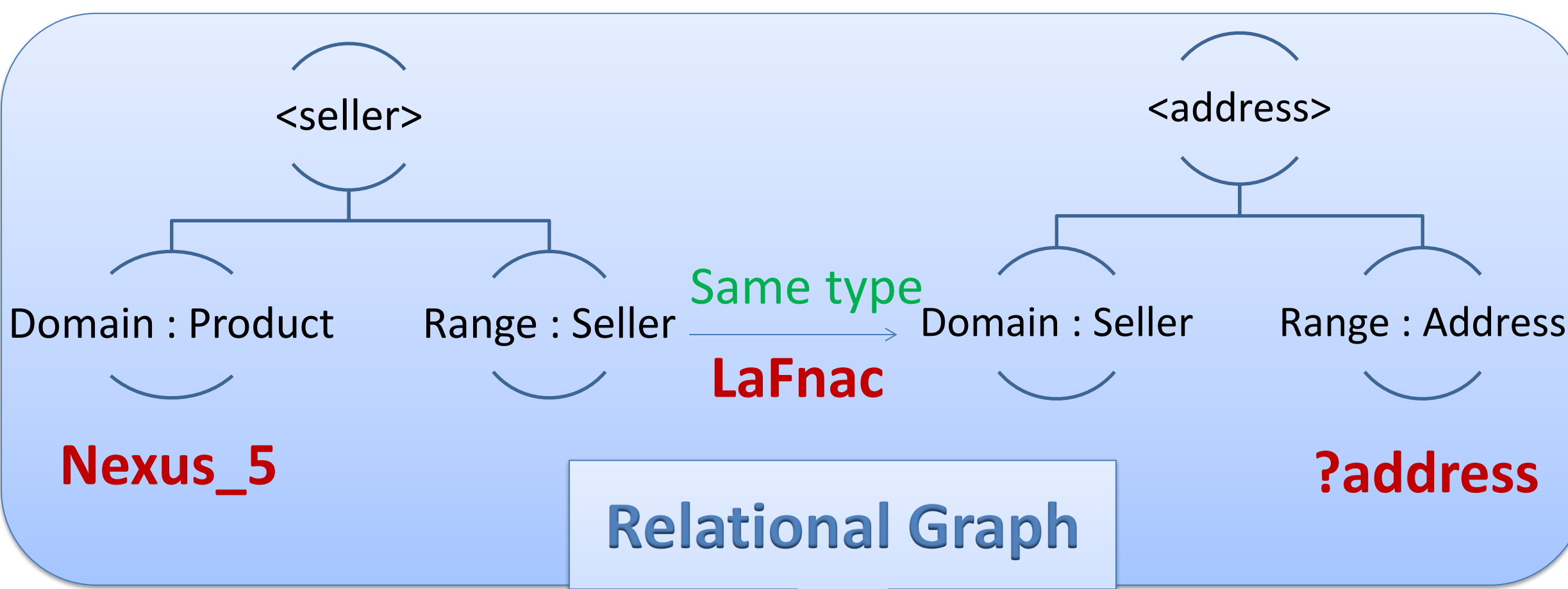
Question Interpretation

EAT Recognition : [ADDRESS]

Property Detection : [sbo:address] [sbo:seller]

Named Entity Recognition : [sbr:Nexus_5]

Query Generation



SPARQL Query

```
SELECT ?address
WHERE {
  ?phone sbo:name "Nexus_5"
  ?phone sbo:seller ?Seller
  ?Seller sbo:address ?address
}
```

Answer

The address of a Nexus 5 seller is 44-46 avenue Jean Medecin Nice!

Answer Generation

Repository of answer patterns

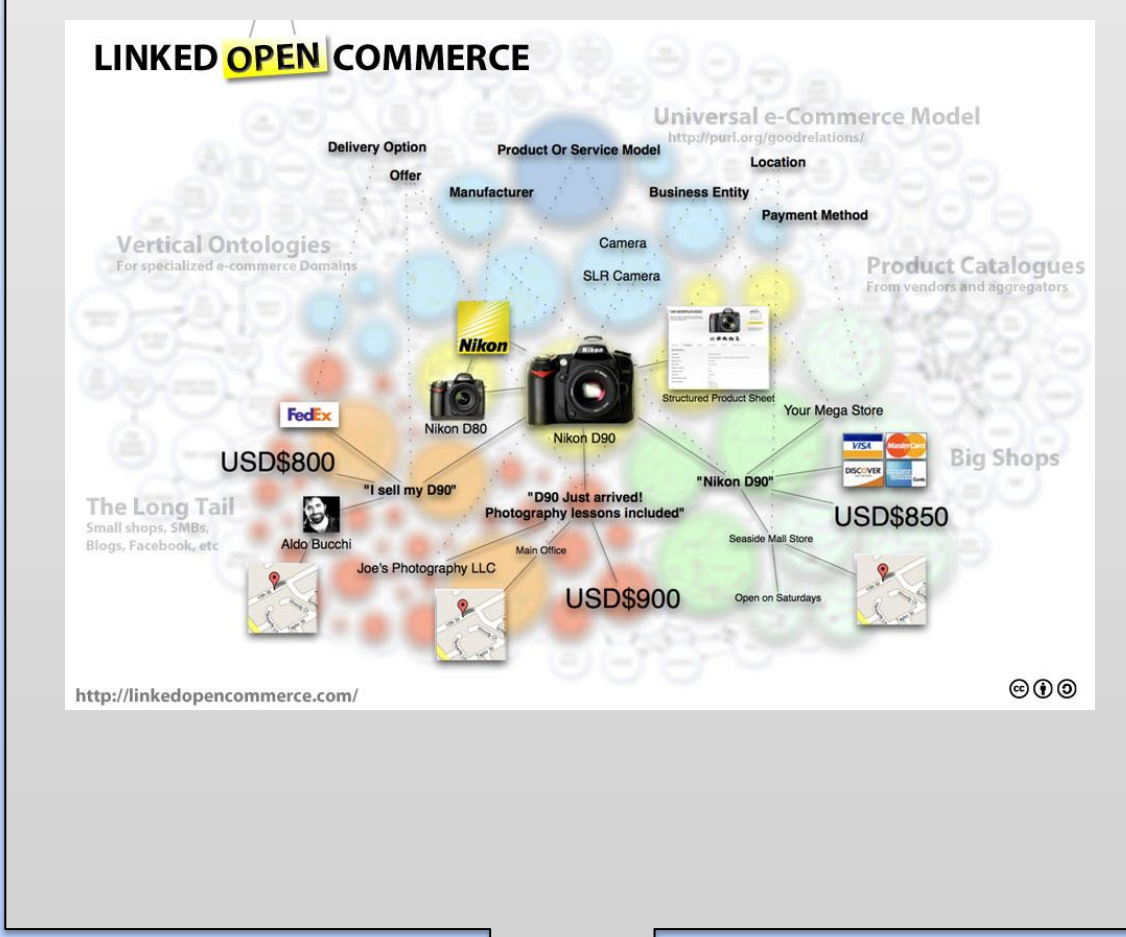
The address of {subject} is {value}

The address of {subject} seller is {value}.

{subject} is located in {value}

Knowledge Base

E-commerce Ontology



Web Sites API



We transform raw data, extracted through the web sites API and relying on an e-commerce Ontology, into RDF Triples.

Triple Store

| Subject | Predicate | Value |
|---------|-----------|--------------------------------|
| Nexus_5 | seller | LaFnac |
| LaFnac | address | 44-46 avenue Jean Medecin Nice |
| Nexus_5 | hasPrice | 400\$ |