CrowdQ:
Crowdsourced Query Understanding

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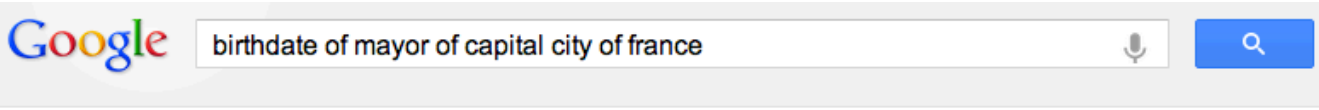
Scenario

Find the birthdate of the mayor of the capital city of France


Google
birthdate of mayor of capital city of france
Web
Images
Maps
Shopping
More
Search tools
About 13,800,000 results (0.20 seconds)
France Cities Map, Major Cities of France
www.mapsofworld.com › France › Facts
Dec 21, 2012 – Paris is the capital of France, as well as the largest city in the country with a population of over 2 million, and a metropolitan area population of ...
Nice - Wikipedia, the free encyclopedia
en.wikipedia.org/wiki/Nice
Giuseppe Garibaldi, born in Nice, strongly opposed the cession to France (arguing ... Two men dominated this period: Jean Médecin, mayor for 33 years from 1928 ... However, it is also the largest city in France that is not a regional capital; the ...
Rouen - Wikipedia, the free encyclopedia
en.wikipedia.org/wiki/Rouen
In the 14th century urban strife threatened the city: in 1291, the mayor was ... Rouen became the capital city of English power in occupied France and when the duke .... Isaac Oliver (c.1560–1617), French-born English portrait miniature painter ...

Google capital city of france

Web Images Maps Shopping News More Search tools

About 131,000,000 results (0.30 seconds)

Paris

France, Capital

Paris - Wikipedia, the free encyclopedia
en.wikipedia.org/wiki/Paris
Coordinates: 48°51'24"N 2°21'03"E / 48.8567°N 2.3508°E / 48.8567; 2.3508. **Paris** is the **capital** and largest **city of France**. It is situated on the river ...
List of tourist attractions in Paris - History of Paris - Demographics of Paris - Paris FC

France facts, **capital city**, currency, flag, language, landforms, land ...
www.worldatlas.com › Europe › France
Name: **France** (long form) French Republic; **Capital City**: **Paris** (2,193,031 pop.) (
11,836,970 metro); **France** Population: (2010 est.) World Populations (all

Paris

Paris is the capital and largest city of France. It is situated on the river Seine, in northern France, at the heart of the Île-de-France region. The city of Paris, within its administrative limits, has a population of about 2,230,000. Wikipedia

Google mayor of paris

Web Images Maps Shopping More Search tools

About 98,900,000 results (0.20 seconds)

Bertrand Delanoë

Paris, Mayor

List of mayors of Paris - Wikipedia, the free encyclopedia
en.wikipedia.org/wiki/List_of_**mayors_of_Paris**
Before the French Revolution, the municipality of **Paris** was headed by the provost of the merchants (prévôt des marchands). On 14 July 1789, at the end of the ...

Bertrand Delanoë - Wikipedia, the free encyclopedia
en.wikipedia.org/wiki/Bertrand_Delanoë
Delanoë has been **mayor of Paris** since 18 March 2001, when control of the city council ... Delanoë won the **mayorship of Paris**, at the head of a coalition of Socialists, ... City Mayors: **Bertrand Delanoe – Mayor of Paris**; ^ "Psychiatric tests for ...
Early life - Career - Personal life - Political career

Letter to the mayor of Paris, re: No skyscrapers! | Architecture Here ...
blogs.providencejournal.com/.../letter-to-the-**mayor-of-paris**-re-no-...
Nov 24, 2012 – Anyway, here is my letter: Nov. 24, 2012. Mr. **Bertrand Delanoe Mayor of Paris** Place de l'Hotel de Ville Paris, France 75004. Dear Mr. Delanoe: ...

Bertrand Delanoë

Bertrand Delanoë is a French politician, and has been the mayor of Paris since 2001. He is member of the Socialist Party. Delanoë was born in Tunis, Tunisia to a French-Tunisian father and a French mother. Wikipedia

Born: May 30, 1950 (age 62), Tunis

Party: Socialist Party

People also search for

Martine Aubry

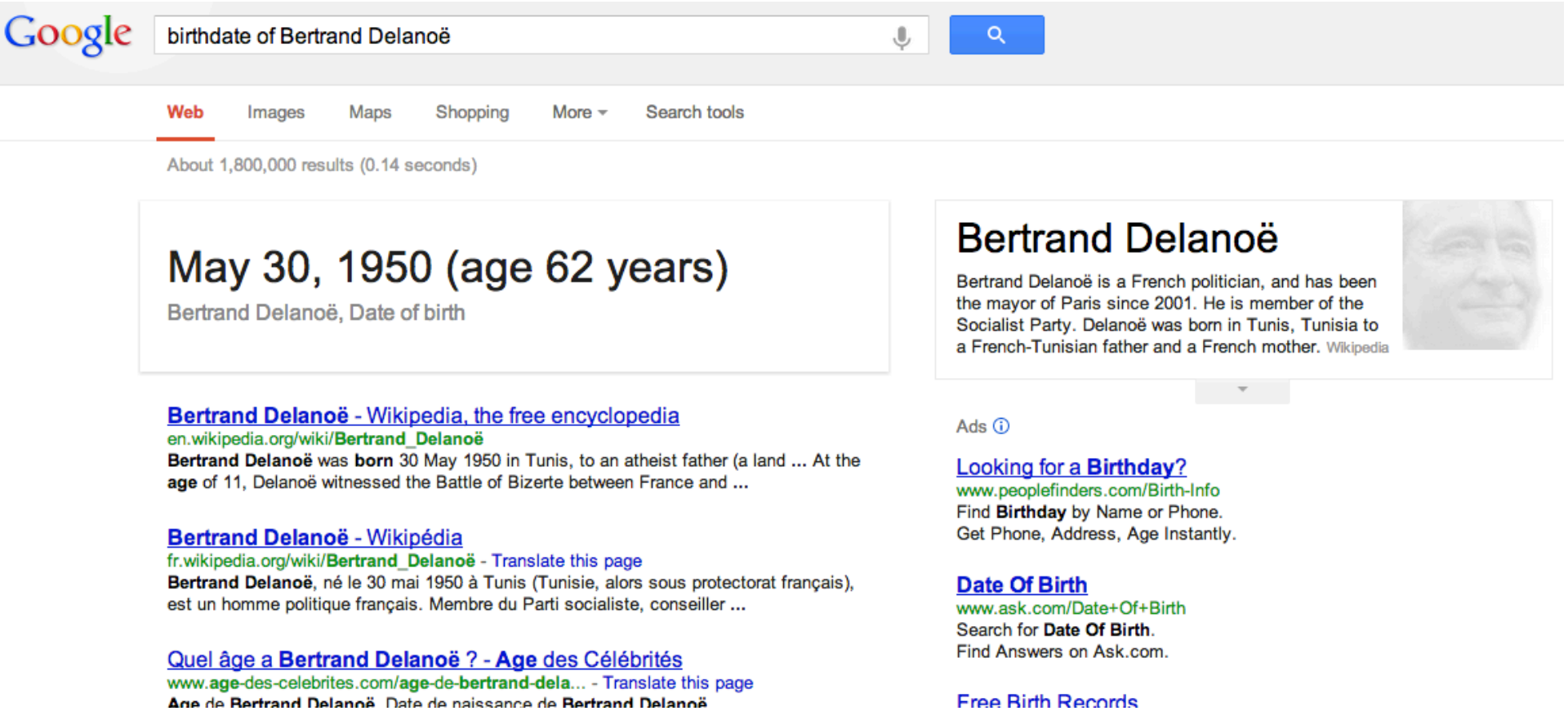
Jacques Chirac

Jean Tiberi

Ségolène Royal

Lionel Jospin

Feedback / More info


Google
birthdate of Bertrand Delanoë
Web
Images
Maps
Shopping
More
Search tools
About 1,800,000 results (0.14 seconds)
May 30, 1950 (age 62 years)
Bertrand Delanoë, Date of birth
Bertrand Delanoë - Wikipedia, the free encyclopedia
en.wikipedia.org/wiki/Bertrand_Delanoë
Bertrand Delanoë was born 30 May 1950 in Tunis, to an atheist father (a land ... At the age of 11, Delanoë witnessed the Battle of Bizerte between France and ...
Bertrand Delanoë - Wikipédia
fr.wikipedia.org/wiki/Bertrand_Delanoë - Translate this page
Bertrand Delanoë, né le 30 mai 1950 à Tunis (Tunisie, alors sous protectorat français), est un homme politique français. Membre du Parti socialiste, conseiller ...
Quel âge a Bertrand Delanoë ? - Age des Célébrités
www.age-des-celebrites.com/age-de-bertrand-dela... - Translate this page
Age de Bertrand Delanoë, Date de naissance de Bertrand Delanoë
Bertrand Delanoë
Bertrand Delanoë is a French politician, and has been the mayor of Paris since 2001. He is member of the Socialist Party. Delanoë was born in Tunis, Tunisia to a French-Tunisian father and a French mother. Wikipedia
Ads
Looking for a Birthday?
www.peoplefinders.com/Birth-Info
Find Birthday by Name or Phone.
Get Phone, Address, Age Instantly.
Date Of Birth
www.ask.com/Date+Of+Birth
Search for Date Of Birth.
Find Answers on Ask.com.
Free Birth Records

Motivation

- Web Search Engines can answer simple factual queries directly on the result page
- Users with complex information needs are often unsatisfied
- Purely automatic techniques are not enough
- We want to solve it with Crowdsourcing!

Background

- Crowdsourcing so far used for **data** processing
  - DB/SemWeb: Data integration and cleaning
  - IR: Relevance judgments

  We use the crowd to understand the **query**

CrowdQ

- CrowdQ is the first system that uses crowdsourcing to
  - *Understand* the intended meaning
  - *Build* a structured query template
  - *Answer* the query over Linked Open Data

birthdate of the mayors of all the cities in Italy

About 124,000,000 results (0.33 seconds)

City	Mayor	Birthdate
Rome, Italy	Gianni Alemanno	March 3, 1958
Venice, Italy	Giorgio Orsoni	August 29, 1946
Milan, Italy	Giuliano Pisapia	May 20, 1949

Press to see more

Cities in Italy | Italy Travel Guide
www.**italy**logue.com/**italian-cities**
Learn about the best **cities in Italy** to visit, and some **Italian cities** you might never have heard of before. These **cities in Italy** are **all** great for visitors.

Top Ten **Cities** for Visitors to **Italy** - Top **Italian Cities** to See
go**italy**.about.com/od/planningandinformation/tp/top**cities**.htm
Italy has many beautiful and historic **cities** that are well worth a visit. Here are our picks for the ten best **cities** for visitors to **Italy**.

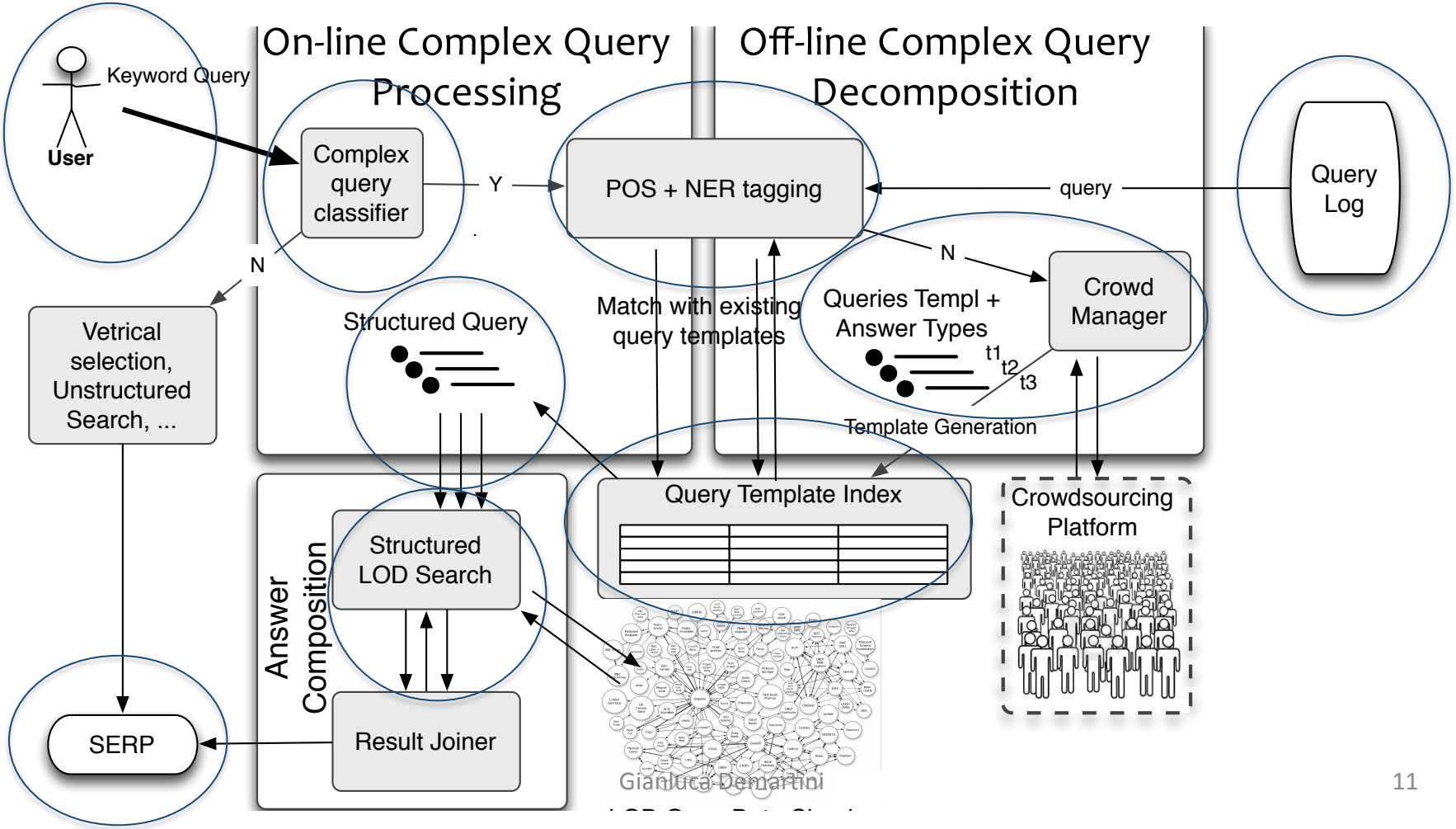
Italian Cities and Towns - **Italy**
en.comuni-**italian**i.it/
Information and statistics on **Italian** Regions, Provinces and Municipalities. **All Cities**, Towns and Villages in **Italy**. Official site, zip codes, phone prefix, population, ...

WHO/Europe | **Italy** - Making **cities** healthy for everyone: European ...
www.euro.who.int/.../**italy**/.../making-**cities**-healthy-for-everyo...
Jun 21, 2012 – Over 300 **mayors** and municipal health leaders met in St Petersburg, Russian Federation on ... Annual Business and Technical Conference of the WHO European Healthy **Cities** Network ... "No **all** solit" (Say no to loneliness) ...

CrowdQ Architecture

Off-line: query template generation with the help of the crowd

On-line: query template matching using NLP and search over open data



Hybrid Human-Machine Pipeline

Q= birthdate of actors of forrest gump

Query annotation	Noun	Noun	Named entity

Verification	Is forrest gump this entity in the query?
Entity Relations	Which is the relation between: actors and forrest gump → starring
Schema element	Starring → <dbpedia-owl:starring>
Verification	Is the relation between: **Indiana Jones – Harrison Ford** **Back to the Future – Michael J. Fox** of the same type as **Forrest Gump - actors**

Structured query generation

Q= birthdate of actors of fo MOVIE mp

```
SELECT ?y ?x
WHERE { ?y <dbpedia-owl:birthdate> ?x .
        ?z <dbpedia-owl:starring> ?y .
        ?z <rdfs:label> 'Fo MOVIE mp' }
```

Results from BTC09:

```
<http://dbpedia.org/resource/Robin_Wright_Penn> 1966-04-08
<http://dbpedia.org/resource/Tom_Hanks> 1956-07-09
<http://dbpedia.org/resource/Sally_Field> 1946-11-06
<http://dbpedia.org/resource/Gary_Sinise> 1955-03-17
<http://dbpedia.org/resource/Mykelti_Williamson> 1960-03-04
```

Current Status

- Realize the vision
- Running demo:
  - Daniel Haas, Daniel Bruckner, Jonathan Harper
- Next Steps
  - Evaluation of Crowd effectiveness at each step
  - Comparison hybrid vs machine pipeline

Conclusions

- CrowdQ: an hybrid approach to complex query understanding
- Combines techniques from DB, NLP, IR, Data Mining, and Human Intelligence
- Initial experiments show the potential of CrowdQ